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Railroad Buying

The Effect of the Rate Decisions

An Impending Advance in Wire—Bessemer Iron Becomes Active

It is too early to say how the iron trade will be affected by the decisions against freight rate advances. There may be some delay in buying by the railroads, and by manufacturers whose product goes largely to railroads. For one thing, replacements and new equipment can now be decided on their merits and not for ulterior reasons. That should not be unfavorable to the steel companies, in view of more than three years of abstemious railroad buying. There is undisguised satisfaction in the iron trade that last week's decision has put a period to the long round of price advances.

That there have been no cancellations of railroad orders now on the books is not surprising, since it is known that the roads placed the material to take care of imperative needs. The present movement in the steel market has had very little help from the railroads, and steel manufacturers expect that they will soon be found rather increasing than reducing their scale of buying.

The Steel Corporation's excellent sales for export make its record of new orders in February relatively better than that of its competitors. With a daily average of 35,000 to 40,000 tons of new orders, the Steel Corporation exceeds its January rate; its shipments last month likewise increased. In the past week the large Pittsburgh companies report some slowing down both in new orders and specifications.

The Steel Corporation now has 65 per cent. of its blast furnace capacity active, against 62 per cent. one week ago, and meanwhile has reduced somewhat its pig iron stocks.

It seems probable that an advance of $1 in wire products will come sooner than has been expected. There is also a possibility of an advance in merchant pipe, which has long been out of its usual relation to other products.

The Harriman rail order, which is likely to be for 150,000 tons or more, is expected in the near future. A sale of 2000 tons has been made for a Rio Janeiro street car line. Japanese interests are negotiating for a considerable tonnage and must close soon in order to avoid the higher duty, effective July 11. A sale of 5000 tons of girder rails has been made to a street railroad in Kyoto. The Wichita & Midland Valley Railway, in Kansas, has bought 7600 tons.

The pig iron market shows that buyers are testing the ability of the furnaces to secure the advances recently asked. In foundry iron business has been done on the old basis where large amounts were involved. Southern sellers are asking $11.25 for No. 2 at Birmingham, for third quarter, and $11.50 for second half. Actual sales reported for third quarter show a

range from $11 to $11.25. In the Chicago district prices are stronger and considerable inquiry has come out. A sale of 10,000 tons of malleable iron was made at Milwaukee for delivery in the last half of the year. A Chicago pig iron firm has reports from 500 foundries which show an average of stocks on hand equal to 70 days' consumption.

Bessemer iron has suddenly become active at Pittsburgh. Sales of 20,000 tons are reported, half of it to be delivered before June, and the remainder in the second and third quarters. On the later deliveries as high as $15.25 was paid. In basic iron there is continued buying at Pittsburgh. At St. Louis 7000 tons of Missouri basic was sold for the second quarter. A St. Louis melter is in the market for 6000 tons for the last half.

The foreign syndicate is reported to have fixed its price at £12 10s. for 50 per cent. ferrosilicon at foreign port, delivery in the second half of the year, making the Atlantic seaboard price, duty paid, above $73. A sale of 6000 tons of domestic ferrosilicon has been made to the leading Pittsburgh interest.

Sales of ore to eastern Pennsylvania furnaces have amounted thus far to about 500,000 tons of Newfoundland and Spanish grades. For the latter an advance to about 8 cents per unit was asked for shipments in the second half of the year, but this is contingent on the holding of the 1910 price for Lake ores. Some deliveries of Spanish ores are carried over from 1910; this is the case to a greater extent with Swedish ores.

The flurry in the scrap market, which under speculative buying advanced prices from 50 cents to $1 a ton, is over. Consumers as a rule have been unwilling to pay the prices reached for melting steel under speculative buying by dealers.

The Freight Rate Decisions

An event which the railroad companies and general business interests have been awaiting for nine months occurred the past week. The Interstate Commerce Commission announced its decisions on the proposed advances in railroad freight rates. Most unexpectedly, these decisions have been adverse to the railroads. The opinion had been steadily gaining ground that they would be permitted to put at least part of the proposed advances in effect. The decisions therefore came as a shock. The railroad companies have been asked to withdraw their proposed increased tariffs before March 10, and if such action is not taken there will be further suspension of the rates and an order issued directing the maintenance of the present rates for a period of two years from March 10.

The commission made an exhaustive examination into all the facts having a bearing on the subject. Hearings were held in different parts of the country and the railroad companies and the shippers were afforded ample opportunity to present evidence from their respective viewpoints. It must therefore be admitted that the commission has not acted hastily nor without mature consideration of the whole case. The decisions not to permit rates to be advanced were unanimous.

Conditions have changed to some extent since the companies announced their intention to advance freight rates. At that time the cost of living was at its highest point, and the problem of how to meet it confronted everybody. Higher wages were being demanded all along the line and the railroad companies were obliged to give their employees substantial advances. As the payment of higher wages meant a considerable increase in operating expense, the easiest way for the railroads to maintain satisfactory net earnings was to pass along the burden of higher costs by advancing their freight rates. It is apparent now that if the Government had not interposed its objection, so that the matter was referred to the commission for its decision as to whether the proposed advances were justified, another potent influence would have been added to those which have so long made the standard of values in this country higher than elsewhere on the globe. But while the commission has been investigating this subject, giving it the thorough consideration demanded by its importance, prices of staples have fallen considerably, and readjustments of various kinds have been made in business conditions. We have had a sufficient reaction from trade activity to bring about a more sober feeling among business men generally and advances in freight rates at this time would have distinctly been a step in the wrong direction. Apart from this, however, comes the conclusion arrived at by the investigation of the commission that the evidence submitted by the railroad companies did not establish the necessity for higher rates. The decision of the commission further says that the probability is that increased rates will not be necessary in the future, but that, "if actual results should demonstrate that our forecast of the future is wrong, there might be ground for asking a further consideration of this subject."

Although this decision is by no means pleasing to the railroad companies, and the managers of some of them take such a gloomy view of the immediate future that they claim they will be obliged to buy less and to pay less for what they buy, it seems to be better for the country at large than if the proposed advances had been agreed to. To accept increased costs as a finality and to endeavor to shift the burden to others would have been to set in motion a new set of influences toward raising the general level of values. The upward tendency had to be checked somewhere. The brake has therefore been applied where it will be felt. Notice is thus given that the railroad companies are not to be placed in a position where they might soon be asked by their employees to agree to another advance in wages. Evidence exist that they are not yet satisfied that the ultimate in this respect has been reached.

If the railroad companies put in effect the threats which some managers are now making, and institute more drastic economies than they have yet applied and withhold specifications on orders already placed, the country may for some little time suffer from a recession in business. This will be unpleasant for those affected and might perhaps extend to such a point that some distress would be experienced. This would have to be borne as part of the penalty we have for a long time been invoking by our adherence to methods which have been raising the general level of costs.

We cannot believe, however, that the situation will prove to be disastrous either to the railroad companies or to business interests. It must be understood that the decision involves no reductions in freight rates. It merely stops proposed advances. The revenues of the railroad companies are not to be reduced from the

present basis. The railroad companies have been able for several months to meet the greater expense caused by the higher wages paid to their employees and their revenues do not seem to have suffered seriously. If the refusal of the commission to permit the railroad companies to increase their earnings at the expense of the country compels them to study more carefully economies of operation and increase their efficiency with the use of present facilities a great gain will be accomplished.

Ore Prices and Pig Iron Prices

A great deal has been said in the past few months concerning the price of Lake Superior ores for 1911. Merchant furnacemen having no ore supply of their own have suffered heavily through the decline in pig iron prices. For the ores they bought last year they paid 50 cents a ton more than in 1909. They argued in the latter part of 1909 and the early part of 1910 that as ore prices for 1910 had advanced, pig iron sold for delivery after the ore of 1910 entered into their mixtures should bring a higher price. Market conditions were against this theoretical reckoning, however. Not only was there no advance for pig iron made from the higher priced ore of 1910, but the price of pig iron steadily declined, and some furnacemen have sold iron at a loss to get out from under the ore piles based on the high ore prices of 1910.

For some months the Lake Superior ore producers have been hearing that if furnacemen's wishes are consulted, no reduction will be made in 1911 from the ore price of 1910. It has been argued that furnacemen would have no recourse but to charge off the amount of the reduction on the piles of ore which they must carry into the new season of navigation, amounting to several million tons. The harrowing experiences of some of the furnaces in the past six months have been cited, furthermore, as an argument for stable ore prices over a period of years. It has been urged that if there could be general assurance that the price of ore would fluctuate little or not at all, greater stability would be imparted to the pig iron market.

The history of pig iron prices scarcely bears out the argument that its course has any close relation to the fluctuations in ore. We may take as an example the well remembered year, 1899. The ore producers had little hint when their prices were fixed, on a basis of $2.95 for old range Bessemer ores, that the pig iron market would soar far beyond the levels of the preceding year. Bessemer pig iron had ranged between $10 and $11, Pittsburgh, for most of the year 1898. There was a slight advance in the early part of 1899, but the gathering momentum of the buying movement under way was not appreciated. The fact was, however, that from an average price of $10.87 in January, 1899, Bessemer iron rose by successive leaps until it reached an average of $24.90 in December of that year. The ore men, who had asked the most moderate margin of profit in 1899, based their price of 1900 on the prosperity the pig iron men had enjoyed in the preceding year, putting it at $5.50, the highest level in 15 years, with the exception of 1887 and 1890, and one that has not been reached since. The furnacemen, who had promptly taken up all the $2.95 ore offered in the spring of 1899, were not so keen to buy at $5.50 the year following, but all made round purchases in view of their handsome profits from the boom. However, 1900 showed almost a complete reversal of the conditions of 1899. Whereas the price of Bessemer pig iron averaged $24.99 for January, 1900, it had fallen to $13.06 by October of that year.

With fluctuations in the price of pig iron amounting to more than $14 in a single year, it can hardly be said that the price of ore is very influential in determining the price of pig iron. The experience of the past year, in fact, with the recession in pig iron scarcely interrupted by its arrival at the cost mark for ore, bears heavily against the argument for stable ore prices as a means to a stable pig iron market.

There is no blinking the fact that the merchant furnaceman, who must pay the merchant oremen's price, is at a disadvantage in competing with the growing list of pig iron sellers who mine their own ore in whole or in part. Yet it is to be said that the percentage of Lake Superior ore that goes upon the market is much smaller than it was 10 years ago, and the price on that percentage is given an exaggerated importance in all discussions of ore prices as related to the price of pig iron and of finished steel. Naturally, the lower the merchant ore price is, the less the handicap of the merchant furnaceman without ore supply, in competing with the consumer of ore who is at the same time a producer. But a stable low price of ore would not be satisfactory to the ore producer; and, moreover, the particular price the furnacemen are now interested in having maintained is not a low one.

So far as the merchant furnaces are concerned which produce steel making pig iron, their future would seem to be bound up in the very fluctuations in pig iron prices which it is now argued should be avoided. They are becoming more and more opportunists. Their profits will come from those swells in the iron market which find the steel companies with less furnace capacity than will meet the demands of their finishing mills. In the case of the foundry iron furnaces, moreover, there is no reason to look for any change from the alternations of rising and receding prices which have marked their business heretofore. The past year of declining prices and disappearing profits must be averaged up with prosperous years in which pig iron profits were inordinate. Concern about costs of raw materials is great when prices hover about the cost line; when the market is soaring, raw material costs are forgotten. It will be so again.

Unreliable Export Agents

In the last three years many American manufacturers have had their first experience in export business, and some of them have had expensive lessons through their lack of knowledge of foreign trade. A great deal of money has been spent to little purpose, but most of the useless expenditures have merely gone to swell the receipts of unscrupulous export agents. The unsophisticated manufacturer who has never sought business outside of his own country is liable to consider any export agent's proposition with favor, but if he falls into the wrong hands it is likely to be an expensive and unfruitful experience.

There are plenty of export houses whose managers know the foreign trade thoroughly and whose dealings are honest. They will not accept a selling agency to which they cannot do justice. On the other hand,

there are too many so-called export traders who are simply in the business for what they can get out of this country. Their chief aim is to establish as many American connections as possible, with no regard to their ability to effect sales. It is their usual practice to demand a retainer as "export manager," and to demand a commission on all foreign sales, regardless of the source of inquiry. They send out salesmen loaded with lines of samples with which they are unfamiliar, and who go about in a haphazard way seeking trade. Most of their orders are obtained through good luck rather than good management, and too often their sales are not made to reliable customers.

An experienced export salesman who carried just seven lines of equipment, all connected with power transmission, recently encountered one of these export representatives in a machinery supply house in Australia and asked him what his line was. The newcomer explained that he represented 54 different companies and when questioned admitted that he could not name them all. "Even a grocery clerk could not name 54 different articles from memory," was the indignant defense of the salesman when his statement created amusement. It is quite probable that many of the manufacturers represented by this salesman got very little in return for their outlay.

Another instance of the folly of trusting foreign accounts to such concerns is shown in the experience of an American mill supply manufacturer, whose line of samples was sent on a year's tour with a representative of an export firm. On the salesman's return the manufacturer, who had become dissatisfied with the service given, demanded the samples. The export house gave him an order to obtain the goods at the steamship dock and they were found wrapped just as they had left the factory. The seals on the wrappings had not been broken.

There are plenty of legitimate export houses whose salesmen are specialists in certain lines. Manufacturers seeking export business should endeavor to find such houses. They should at least be as careful in making export connections as in arranging for domestic sales agencies.

Iron and Steel Company Merger Rumors.—Rumors of combinations in the steel industry have been frequent of late. In addition to the reported efforts to merge two Wheeling district companies and the alleged revival of a project for uniting two Alabama companies, there has been a rather circumstantial report of negotiations by prominent steel men for a merger including a Pittsburgh, a Youngstown and a Chicago district steel company, the products involved being wire, sheets, bars and wrought pipe. This last report, it can be stated on authority, is unfounded.

The annual meeting of stockholders of the Wheeling Steel & Iron Company was held at Wheeling, W. Va., February 15. The annual report submitted by C. R. Hubbard, president, showed that the net earnings for the past year were $701,000, of which $500,000 was distributed among stockholders, being a dividend of 10 per cent. on a capital of $5,000,000, leaving a surplus for the year of $201,000. The directors were re-elected as follows: C. R. Hubbard, W. F. Stifel, George K. Wheat, W. A. Isett, Edward Hazlett, H. H. Hornbrook.

The Decatur Bridge Company, Decatur, Ill., has increased its capital stock from $100,000 to $200,000, but it does not contemplate any additional improvements at this time.

Bolt, Nut and Rivet Men Dine Together

Through the efforts of A. Schoonmaker, Western sales manager of the Graham Nut Company, the Western representatives of bolt, nut and rivet manufacturers met for a banquet at the Congress Hotel, Chicago, on the evening of February 22. Those in attendance were:

W. J. Phalen, Buffalo Bolt Company.
A. Schoonmaker and C. J. Graham, Graham Nut Company.
J. F. Donahue, Russell, Burdsall & Ward Bolt & Nut Company.
Frank W. Davis, Lake Erie Iron Company.
R. P. Zint, Republic Iron & Steel Company.
Chas. W. Clark.
Paul Wendt, Steel Car Forge Company.
B. S. Handwork, National Bolt & Nut Company.
A. U. Klingman, Bourne-Fuller Company.
J. W. O'Leary, Arthur J. O'Leary & Son Company.
P. Joyce, Illinois Bolt, Nut & Forging Company.
Theo. Geissman, Theo. Geissman & Co.
D. P. Donelson and E. Ahrens, Continental Bolt & Iron Works.
W. H. Darrah, Upson Nut Company.
W. H. Taylor and T. F. Donahue, Central Steel & Supply Company.
Max Jones, Buffalo Nut Company.
Charles Phalen, Garland Nut & Rivet Company.

Mr. Schoonmaker acted as toastmaster, and, in his introductory remarks, stated the purpose of the gathering, which was to bring together on a social footing the representatives of the various bolt, nut and rivet manufacturers in the Western section of the country, and to promote friendship and harmony among them. The affair was essentially social in nature, and all present entered into the congenial spirit of the occasion. The set speeches of the evening were as follows: "Chicago: Its Present and Future," Judge Fred L. Fake; "A Survey of the Field," Ralph P. Zint; "Salesmanship," Chas. J. Graham; "Co-operation," Frank W. Davis; "The Law and Trade Associations," James S. Wilkerson. It was resolved that some form of organization be arranged, with a view toward maintaining the cordial relations established by the banquet, and that a similar gathering be held at least annually hereafter.

Name Plates on American Machinery

C. A. Tupper, Milwaukee, Wis., who is now in Europe, writes as follows regarding some observations he made *en voyage:*

During a visit to Ponta Delgada, the capital of the Azores Islands, the writer was gratified to find a large woodworking plant, operated by Coelho & Rosa, which has been completely equipped, from band saw to molders, mortisers, &c., with American-built machinery. Of greater significance to our export trade, however, is the fact that from several of the machines, which were unmistakably of recent manufacture, the name plates had been removed, and the manager could not recall the addresses of the makers. Nor did he remember just why or how they had disappeared, except in the case of one of the planers, which appeared to be of the S. A. Wood Machine Company's design. This had been slightly repaired by a local smithy, and, in getting at the broken part, the name plate was wrenched off, only to be cast aside.

The careless or intentional removal of name plates is common enough in our own country, but when American-built machinery suffers this mutilation abroad, the matter is one of more vital import. The reasons are obvious. Most of the machines in the plant above mentioned had the names of the manufacturers cast in the frame, and this is undoubtedly the sensible thing to do. A separate brass plate for giving other details may be desirable, but the maker's name and the pattern number should appear prominently and ineradicably on the main part of the machine. It is even well to have the letters indented, rather than raised, for unscrupulous dealers, in re-handling, do not hesitate to chip them off. Local jealousy of foreign-built machinery also leads to much intentional mutilation. As the same precautions are of service in domestic trade, they would seem to be well worth the attention of American manufacturers, to whom this observation in one of the principal outports of Europe is respectfully referred.

Connellsville Coke Interests and Railroad Discrimination

On the evening of February 17 Isaac W. Semans gave a dinner to the merchant coke producers and others interested in the development of the Connellsville region at the Uniontown Country Club, Uniontown, Pa. Over 75 were present. An account of the dinner was published in the Connellsville *Courier* of February 18. Ernest H. Rowe, secretary of the Coke Producers' Association, was toastmaster, and in his introductory remarks gave a history of that organization and made a strong plea for its better support.

The principal address was made by Howard D. Mannington, commissioner of the Ohio Coal Operators' Association, who first dwelt on the necessity of a stronger organization for mutual advantage and then launched a scathing arraignment of the discrimination against Connellsville coke interests by the railroads which connect the region with centers of consumption. Making the assertion that "the coke rates from the Connellsville region are unreasonable by every standard to which they may be applied," he presented an array of statistics drawn from official sources to support his contention. One of his conclusions was that, as compared with other commodities hauled, coke is bearing more than its share of the burden of sustaining the transportation lines. He further showed that other coke producing districts enjoy lower freight rates in reaching certain consuming centers. John P. Brennan, president of the Thompson-Connellsville Coke Company, made an address somewhat along the same lines. John W. Bolleau, coal and coke expert, Pittsburgh, aroused the enthusiasm of his hearers by showing the great extent of territory which the Connellsville region would supply exclusively with coke if fair and nondiscriminatory freight rates were arranged. Other speakers were Henry P. Snyder, editor of the *Courier*, and James R. Cray and E. D. Fulton, Uniontown, attorneys and collateral coke operators.

The American Manufacturers' Export Association

Henry T. Wills, whose name has been long associated with foreign trade matters and who is considered an expert on conditions and methods prevailing in foreign countries, has been engaged to act as secretary for the American Manufacturers' Export Association, 1 Madison avenue, New York City. He performed notable work as secretary of the National Tariff Commission Association. It is hoped that the new association may be made a body of such power as not only to foster foreign commerce but to prove a force in securing from time to time legislation which will prove an uplift to our manufacturers and will impress buyers and consumers as well as competitors in foreign markets.

Among the members of the American Manufacturers' Export Association and those who are taking a vital interest in its management are the following: Adriance-Platt Company, Borden Company, Henry Disston's Sons Company, Du Pont de Nemours Powder Company, Eastman Kodak Company, C. A. Edgarton Mfg. Company, General Electric Company, H. J. Heinz Company, National Cash Register Company, Perkins-Campbell Company, Sargent & Co., Sherwin-Williams Company, Simonds Mfg. Company, Studebaker Brothers Company, Victor Talking Machine Company, Westinghouse Electric & Mfg. Company.

Suggestions Wanted for Catalogue Size.—The Henneberry Company, 552-556 Wabash avenue, Chicago, is about to publish a general catalogue of tools for metal workers and woodworkers. It is to be a standard work, issued quarterly. The company desires to learn the opinion of the trade as to the best size of such a publication for universal service. The book will have 1000 pages, and it is desirable to adopt for it a size that will be most approved by the manufacturer, dealer and consumer. The sizes which are under consideration are 6 x 9 in., 7 x 10 in., 8 x 11 in. and 9 x 12 in. The suggestions should be addressed to the company.

The Proposed Naval Additions

The Naval Programme bill, as passed last week by the House of Representatives, provides for the construction of two new battleships, two fleet colliers, eight torpedo boat destroyers and four submarine torpedo boats. The two battleships are to be the largest ever constructed in this country, and while the authorization fixes the displacement of these superdreadnoughts at 27,000 tons, there is a likelihood that they may go up to 30,000 tons. The new battleships will have 12 14-in. rifles, the heaviest battery ever placed on a ship in this country or in the world. These guns will be arranged in four turrets, three guns in each turret.

The bill carries the following provisions, adopted on motion of Representative Stanley of Kentucky:

Provided, That no part of any sum herein appropriated shall be expended for the purchase of structural steel ship plates, armor, armament or machinery from any persons, firms or corporations who have combined or conspired to monopolize the interstate or foreign commerce of the United States, or the commerce between the States and any Territory or the District of Columbia in any of the articles aforesaid, and no purchase of structural steel, ship plates or machinery shall be made at a price in excess of a reasonable profit above the actual cost of manufacture. And no purchase of armor or armament shall be made at a price in excess of 100 per centum above the actual cost of manufacture, but this limitation shall in no case apply to any existing contracts.

Provided, That no part of this appropriation shall be expended for the purchase of armor or armament from any person, firms or corporations who have entered into any combination, agreement, conspiracy or understanding, the effect, object or purpose of which is to deprive the Government of fair, open and unrestricted competition in letting contracts for the furnishing of any of said armor or armament; and no purchase of armor or armament shall be made at a price in excess of 100 per centum above the actual cost of manufacture.

Another proviso declares that "no part of the money shall be paid to any person, firm or corporation which has not at the commencement of and during the construction of the work for which this appropriation is made, established an eight-hour workday for all employees, laborers and mechanics engaged in doing the work for which this money is appropriated."

Jones & Laughlin Improvements

No. 3 blast furnace of the Eliza group of the Jones & Laughlin Steel Company, Pittsburgh, has been blown out and will be completely rebuilt. The furnace was built nine years ago and in that time has made a total of 1,566,110 tons of pig iron on the original lining. The work of rebuilding this stack will be done entirely by the Jones & Laughlin Steel Company, as in the case of stack No. 1 of the same group, which was torn down and rebuilt in the record time of 95 days.

The company has placed a contract with the Standard Engineering Company, Ellwood City, Pa., for the building of another unit of 12 hot tin mills at Aliquippa, Pa., which will make a total of 24 hot mills, 12 of which have been in operation since last summer. The plant is laid out to accommodate 36 hot mills, but the other 12 will probably not be built for some time.

Reports have appeared in the daily press that the La Belle Iron Works, Steubenville, Ohio, and Wheeling Steel & Iron Company, Wheeling, W. Va., will consolidate their interests into one company. It is officially stated that some preliminary work has been done by representatives of both companies with a view of merging them, but the matter is merely in a preliminary stage and nothing may come of it.

Lake shipbuilders will be asked within a few weeks to submit bids for a new car ferryboat to be built by the Mackinaw Transportation Company for service in the Straits of Mackinaw. The boat will be 352 ft. long, 60 ft. wide, and will have capacity for 25 cars as well as passenger accommodations. Frank E. Kirby, Detroit, Mich., is preparing the plans. The American Shipbuilding Company has just closed a contract for a 165-ft. sand sucker, which will go to an upper lake port.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Mar. 1, 1911.	Feb. 21, 1911.	Feb. 1, 1911.	Mar. 2, 1910.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	$15.50	$15.50	$15.50	$18.00
Foundry No. 2, Southern, Cincinnati	14.25	14.25	14.25	16.75
Foundry No. 2, Birmingham, Ala.	11.00	11.00	11.00	13.50
Foundry No. 2, local, Chicago	15.50	15.50	15.50	18.50
Basic, delivered, eastern Pa.	**15.00**	14.50	14.25	18.50
Basic, Valley furnace	13.75	13.75	13.25	16.00
Bessemer, Pittsburgh	15.90	15.90	15.90	18.90
Gray forge, Pittsburgh	14.40	14.40	14.15	16.15
Lake Superior charcoal, Chicago	17.50	17.50	17.50	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	23.00	23.00	23.00	27.50
Forging billets, Pittsburgh	28.00	28.00	28.00	32.00
Open hearth billets, Philadelphia	25.40	25.40	25.40	30.60
Wire rods, Pittsburgh	29.00	29.00	28.00	33.00
OLD MATERIAL, Per Gross Ton:				
Iron rails, Chicago	15.50	15.50	14.50	19.00
Iron rails, Philadelphia	**18.50**	18.00	17.00	20.00
Car wheels, Chicago	**13.25**	13.00	13.00	17.00
Car wheels, Philadelphia	14.00	14.00	13.00	16.75
Heavy steel scrap, Pittsburgh	14.75	14.75	13.50	16.50
Heavy steel scrap, Chicago	*12.00*	12.50	11.50	15.00
Heavy steel scrap, Philadelphia	14.50	14.50	12.50	16.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Bessemer steel rails, heavy, at mill	1.25	1.25	1.25	1.25
Refined iron bars, Philadelphia	1.37½	1.37½	1.30	1.60
Common iron bars, Chicago	*1.27½*	1.30	1.30	1.55
Common iron bars, Pittsburgh	1.35	1.35	1.35	1.65
Steel bars, tidewater, New York	1.56	1.56	1.56	1.61
Steel bars, Pittsburgh	1.40	1.40	1.40	1.45
Tank plates, tidewater, New York	1.56	1.56	1.56	1.71
Tank plates, Pittsburgh	1.40	1.40	1.40	1.55
Beams, tidewater, New York	1.56	1.56	1.56	1.66
Beams, Pittsburgh	1.40	1.40	1.40	1.50
Angles, tidewater, New York	1.56	1.56	1.56	1.66
Angles, Pittsburgh	1.40	1.40	1.40	1.50
Skelp, grooved steel, Pittsburgh	1.30	1.30	1.30	1.50
Skelp, sheared steel, Pittsburgh	1.35	1.35	1.35	1.60
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.20	2.20	2.20	2.40
Wire nails, Pittsburgh*	1.75	1.75	1.75	1.85
Cut nails, Pittsburgh	1.60	1.60	1.60	1.85
Barb wire, galv., Pittsburgh*	2.05	2.05	2.05	2.15
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	12.75	12.75	12.75	13.75
Electrolytic copper, New York	12.37½	12.37½	12.37½	13.37½
Spelter, New York	**5.70**	5.60	5.55	5.75
Spelter, St. Louis	**5.55**	5.45	5.40	5.60
Lead, New York	*4.40*	4.42½	4.50	4.65
Lead, St. Louis	*4.25*	4.27½	4.32	4.50
Tin, New York	*42.25*	44.75	42.75	32.87½
Antimony, Hallett, New York	**9.25**	8.00	7.75	8.25
Tin plate, 100-lb. box, New York	$3.94	$3.94	$3.84	$3.84

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought boiler tubes.

Structural Material.—I-beams and channels, 3 to 15 in., inclusive, 1.40c. to 1.45c., net; I-beams over 15 in., 1.50c. to 1.55c., net; H-beams over 8 in., 1.55c. to 1.60c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.40c. to 1.45c., net; angles over 6 in., 1.50c. to 1.55c., net; angles, 3 in., on one or both legs, less than ¼ in. thick, 1.45c., plus full extras as per steel bar card, effective September 1, 1909; tees, 3 in. and up, 1.45c., net; zees, 3 in. and up, 1.40c. to 1.45c., net; angles, channels and tees, under 3 in., 1.45c., base, plus full extras as per steel bar card of September 1, 1909; deck beams and bulb angles, 1.70c. to 1.75c., net; hand rail tees, 2.50c.; checkered and corrugated plates, 2.50c. net.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.40c. to 1.45c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates), 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

Sheets.—Makers' prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows: Blue annealed sheets, Nos. 3 to 8, U. S. standard gauge, 1.55c.; Nos. 9 and 10, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 1.85c. One pass, cold rolled, box annealed sheets, Nos. 10 to 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 1.95c.; Nos. 17 to 21, 2c.; Nos. 22, 23 and 24, 2.05c.; Nos. 25 and 26, 2.10c.; No. 27, 2.15c.; No. 28, 2.20c.; No. 29, 2.25c.; No. 30, 2.35c. Three pass, cold rolled sheets, box annealed, are as follows: Nos. 15 and 16, 2.05c.; Nos. 17 to 21, 2.10c.; Nos. 22 to 24, 2.15c.; Nos. 25 and 26, 2.20c.; No. 27, 2.25c.; No. 28, 2.30c.; No. 29, 2.35c.; No. 30, 2.45c. Galvanized sheets, Nos. 10 and 11, black sheet gauge, 2.20c.; Nos. 12, 13 and 14, 2.30c.; Nos. 15, 16 and 17, 2.45c.; Nos. 18 to 22, 2.60c.; Nos. 23 and 24, 2.70c.; Nos. 25 and 26, 2.90c.; No. 27, 3.05c.; No. 28, 3.20c.; No. 29, 3.30c.; No. 30, 3.50c. Painted roofing sheets, No. 28, $1.55 per square. Galvanized sheets, No. 28, $2.75 per square for 2½-in. corrugations. All above prices are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount 10 days from date of invoice.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 1:

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
Butt Weld.				
⅛, ¼, ⅜ in.	72	58	68	54
½ in.	75	63	71	59
¾ to 1¼ in.	79	69	75	65
2 to 3 in.	80	70	76	66
Lap Weld.				
2 in.	76	66	72	62
2½ to 4 in.	78	68	74	64
4½ to 6 in.	77	67	73	63
7 to 12 in.	75	59	71	55
13 to 15 in.	51½	..	..	..
Butt Weld, extra strong, plain ends, card weights.				
½, ¼, ⅜ in.	69	59	65	55
½ in.	74	68	70	64
⅝ to 1¼ in.	78	72	74	68
2 to 3 in.	79	73	75	69
Lap Weld, extra strong, plain ends, card weight.				
2 in.	75	69	71	65
2½ to 4 in.	77	71	73	67
4½ to 6 in.	76	70	72	66
7 to 8 in.	69	59	65	55
9 to 12 in.	64	54	60	50
Butt Weld, double extra strong, plain ends, card weight.				
½ in.	64	58	60	54
¾ to 1¼ in.	67	61	63	57
2 to 3 in.	69	63	65	59
Lap Weld, double extra strong, plain ends, card weight.				
2 in.	65	59	61	55
2½ to 4 in.	67	61	63	57
4½ to 6 in.	66	60	62	56
7 to 8 in.	59	49	55	45

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	Plugged and Reamed.	
1 to 1½, 2 to 3 in.	Butt Weld	Will be sold at two (2) points lower basing (higher price) than merchant or card weight pipe. Butt or Lap Weld as specified.
2, 2½ to 4 in.	Lap Weld	

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in charcoal are as follows:

	Steel.	Iron.
1 to 1½ in.	49	43
1¾ to 2¼ in.	61	43
2½ in.	63	48
2¾ to 3 in.	69	55

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads to destinations east of the Mississippi River will be sold at delivered discounts for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer, open hearth and chain rods, $29.

Steel Rivets.—Structural rivets, ¾ in. and larger, 1.90c., base; cone head boiler rivets, ¾ in. and larger, 2c., base; ⅝ in. and 11-16 in. take an advance of 15c., and ½ in. and 9-16 in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill.

Pittsburgh

PARK BUILDING, March 1, 1911.—(*By Telegraph.*)

Pig Iron.—Bessemer pig iron, which has been lying dormant so long, is beginning to move, and we can report sales of fully 20,000 tons, of which about half is for delivery up to June, and on the other half deliveries run as far ahead as October, the iron running to June bringing $15, while the third quarter iron brought as high as $15.25, at Valley furnace. It is said that other inquiries are pending for considerable tonnage. There has also been a heavy movement in basic iron. A sale of 1500 tons of No. 2 foundry iron ,for delivery up to June, is reported at $13.75, Valley furnace. The whole pig iron market is more active in inquiries, while prices are firmer. We quote Bessemer pig iron, $15; malleable Bessemer, $13.75; basic, $13.75 to $14; No. 2 foundry, $13.75 to $14, and gray forge, $13.50, all at Valley furnace, the freight rate to the Pittsburgh district being 90c. a ton.

Steel.—Actual orders sent to the mills in the billet and rail sales department of the Carnegie Steel Company in February showed an increase over January of more than 100,000 tons. Consumers of billets and bars are specifying freely against their contracts, and the steel market is quite active, with prices very firm. We quote Bessemer and open hearth billets, 4 x 4 in. and up to, but not including, 10 x 10 in., at $23, base, and sheet and tin bars in 30-ft. lengths, $24, f.o.b. Pittsburgh or Youngstown, full freight to destination added. We quote 1½-in. billets at $24 and forging billets at $28, base, usual extras for sizes and carbons, f.o.b. Pittsburgh or Youngstown districts, freight to destination added.

(*By Mail.*)

While opinion is somewhat divided as to the effect of the freight rate decisions on the iron trade, the belief predominates that there will be a slowing down in buying by the railroads. Yet it is thought that after a little time orders will commence to come for the supplies which they so badly need. The volume of new orders and specifications against contracts has shown a falling off the past week, as compared with the previous week. This may be due to the fact that buying until a week ago was quite active, and consumers are pretty well covered, but, on the other hand, some believe the recent spurt was only temporary and we now have the reaction. The weak spot in the situation is steel making pig iron, of which heavy stocks are still being carried by the Valley furnaces, which fact is well known to the consumers and they are going slow in placing orders. The new demand and specifications against contracts for billets and sheet and tin bars continues active, and prices on steel are firm. The situation in finished iron and steel is fairly satisfactory. The flurry in scrap seems to be pretty well over. For the first time in some months, coke is showing betterment in inquiry and prices are firmer.

Ferromanganese.—The market is very quiet, being practically bare of new inquiry, and prices are weak. We quote 80 per cent. foreign at $37.50 to $37.75, Baltimore, the freight rate to the Pittsburgh district being $1.95 a ton.

Ferrosilicon.—The leading local consumer is reported to have closed for a very large amount of domestic 50 per cent ferrosilicon for forward delivery, said to be above 5000 tons, but neither the name of the seller nor the price paid has been given out. Another local interest is in the market for 300 tons for delivery up to July, and this business is practically closed on the basis of about $54, Pittsburgh. We quote 50 per cent. at $54 to $54.50, f.o.b. Pittsburgh, for delivery up to July. We quote 10 per cent. blast furnace silicon at $23; 11 per cent., $24, and 12 per cent., $25, f.o.b. cars, Jisco and Ashland furnaces.

Muck Bar.—The higher prices being asked for gray forge pig iron have had their effect on muck bar, best grades made from all pig iron now being held firmly at $30, Pittsburgh. There is no new inquiry in this market.

Skelp.—There is a fairly active new inquiry for both iron and steel skelp, and prices are firm. A leading local maker reports a sale of 1500 tons of sheared iron skelp, wide sizes, at 1.75c. delivered at buyer's mill. We quote grooved steel skelp at 1.30c., sheared steel skelp, 1.35c.; grooved iron skelp, 1.60c. to 1.65c., and sheared iron skelp, 1.70c. to 1.75c., all for delivery at consumers' mills in the Pittsburgh district, usual terms.

Wire Rods.—The leading consumers of wire rods covered their requirements for some time ahead prior to the recent advance in prices, and as a result new inquiry is light. Specifications against contracts are coming in only in a moderate way. A sale is reported of 500 tons of open hearth chain rods for delivery up to July at $29, Pittsburgh.

Steel Rails.—No domestic contracts of moment for standard sections have been placed, and new orders for light rails are also quiet, and only for small lots. The demand from the lumber interests for light rails is expected to be much better in the near future. Prices on light rails are as follows: 12-lb. rails, 1.25c.; 16, 20 and 25 lb., 1.21c. to 1.25c.; 30 and 35 lb., 1.20c., and 40 and 45 lb., 1.16c. The prices are f.o.b. at mill, plus freight, and are the minimum of the market on carload lots, small lots being sold at a little higher price. Standard sections are held at 1.25c. per pound.

Plates.—The Cambria Steel Company has received an order for 500 steel hopper cars for the Lehigh & New England Railroad, and this is the only recent contract of any moment mentioned here. A local interest is reported to have an order for the laying of a 12-in. riveted pipe line in Brazil, which will require a heavy tonnage of plates. The market is firm, and we quote ¼-in. and heavier plates at 1.40c., Pittsburgh.

Structural Material.—Some fair sized contracts have been placed. The Fort Pitt Bridge Works has taken 1600 tons for a new steel pier at New Orleans. The McClintic-Marshall Construction Company has taken about 600 tons for the John B. Stetson Building at Philadelphia, 400 tons for the new office building of the Republic Iron & Steel Company at Youngstown, about 500 tons for a new warehouse at Newark, N. J., and 800 tons for a new Government foundry at Puget Sound Navy Yard, Bremerton, Wash. The Pittsburgh Bridge & Iron Works, Rochester, Pa., has taken 600 tons for new steel buildings for the Hammermill Paper Company, at Erie, Pa. The American Bridge Company has taken 400 tons for an addition to a hotel in Baltimore. A new bridge is to be built across the Allegheny River in Pittsburgh, and bids will be asked in a few days by the Department of Public Works, Pittsburgh, for the erection of the piers, and bids for the structural steel, 3000 to 4000 tons, will likely be invited in the latter part of this month or in April. A great deal of new work is being figured on, but it is slow in coming out. We quote beams and channels up to 15 in. at 1.40c., Pittsburgh.

Tin Plate.—While the new demand is slack, large consumers are specifying freely against contracts placed in November and December, and all the leading mills are operating close to full capacity. Last week's shipments by the American Sheet & Tin Plate Company of tin mill products were much the largest in any one week for some months, and the company is now operating to about 90 per cent. of its hot tin mill capacity. Prices are firm on the basis of $3.70 per base box of 100-lb. cokes, f.o.b. Pittsburgh.

Sheets.—Present conditions in the sheet trade are referred to by the mills as being fairly satisfactory. The new demand is heavier than it was some time ago and specifications against contracts are coming in at a better rate than for some time. The recent meetings of the sheet makers have brought about more stability in prices. The full schedule of prices in effect on the different grades of sheets is printed on a previous page.

Bars.—The new demand is dull, and specifications

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against contracts are only fair. The implement makers are not showing any disposition to place contracts for their season requirements. Prices on iron bars are firmer, due to the recent advance in scrap, but the mills are having trouble in getting any better figures from their customers. We continue to quote steel bars at 1.40c. and iron bars at 1.35c. to 1.40c. in carload and larger lots, f.o.b. Pittsburgh.

Hoops and Bands.—New orders are light and only for small lots to cover actual needs. Large consumers of hoops and bands are specifying in a fairly liberal way against contracts placed in December and January. We quote steel hoops at 1.50c. and bands at 1.40c., extras on the latter as per the present steel bar card. It is stated that prices of hoops and bands are now being quite well maintained.

Spikes.—A local maker reports that in two days recently it entered new orders for 15,000 kegs of railroad spikes for forward delivery. Two of the leading Western railroads are in the market for fairly large lots. It is stated that prices adopted February 1 are being firmly held, and these are as follows:

Railroad Spikes.

4½, 5 and 5½ x 9/16	$1.55
3, 3½, 4, 4½ and 5 x ½	Extra .10
3½, 4 and 4½ x 7/16	Extra .20
3, 3½, 4 and 4½ x ⅝	Extra .30
2½ x ⅝	Extra .40
2½, 3 and 3½ x 9/16	Extra .60
2 x 9/16	Extra .80

Boat Spikes.

¾ in. square, 12 to 24 in. long	Extra .15
⅝ in. square, 8 to 16 in. long	Extra .15
½ in. square, 6 to 16 in. long	Extra .15
7/16 in. square, 6 to 12 in. long	Extra .20
⅜ in. square, 4 to 12 in. long	Extra .30
5/16 in. square, 4 to 8 in. long	Extra .45
¼ in. square, 4 to 8 in. long	Extra .75
¼ in. square, 3 to 3½ in. long	Extra 1.00

⅝ and 5/16 shorter than 4 in., ¼ cent extra.

Spelter.—Prices are firm and higher, and the demand is reported more active than for some time. We quote prime grades of Western at 5.45c., East St. Louis, equal to 5.57½c., Pittsburgh. A sale of 25 tons to a local consumer is reported at this price.

Shafting.—The new demand is fair, but specifications from the automobile trade are very slow. The implement makers are specifying satisfactorily against their shafting contracts. We quote cold rolled shafting at 57 per cent. off in carloads and 52 per cent. in less than carloads delivered in base territory.

Merchant Steel.—New orders received by the mills and shipments in February showed a slight increase, as compared with January, in spite of the short month. Prices are reported firm, and we quote as follows, f.o.b. Pittsburgh: Iron finished tire, ½ x 1½ in. and heavier, 1.40c., base; under these sizes, 1.55c.; planished tire, 1.60c.; channel tire, 1.80c., base; toe calk, 1.90c.; flat sleigh shoe, 1.55c.; concave or convex, 1.75c.; cutter shoes, tapered or bent, 2.25c.; spring steel, 2c.; machinery steel, smooth finish, 1.90c.

Rivets.—New orders for small lots are being received to cover actual needs, but specifications against contracts are not satisfactory. Regular prices of 1.90c. on structural rivets and 2c. on boiler rivets continue to be slightly shaded on desirable orders.

Wire Products.—The new demand for wire nails and wire is quiet, and reports are that specifications against the contracts placed prior to the recent advance in prices are not coming in in a very satisfactory way to the mills. The makers of wire products have a large amount of business on their books, and look for more activity in the near future. It is stated that regular prices are being maintained. We quote galvanized barb wire at $2.05; painted, $1.75; annealed fence wire, $1.55; galvanized, $1.85; wire nails, $1.75, and cut nails, $1.60, in carload and larger lots, all f.o.b. Pittsburgh, full freight to point of delivery added.

Merchant Pipe.—The order for about 80 miles of 3 to 10 in. line pipe, placed last week by the Tri-State Natural Gas Company, went to the Mark Mfg. Company, and the couplings to the Dayton Coupling Mfg. Company, Dayton, Ohio. Several other gas and oil lines are in the market, and may be given out in the near future. The general demand for merchant pipe is only fair, and the tonnage entered by the mills in February showed a falling off, as compared with January. Discounts on iron and steel pipe, printed on a previous page, are well held.

Boiler Tubes.—The boiler shops are pretty well covered on tubes for some time ahead, but are not specifying very freely against their contracts. The new demand for locomotive tubes is dull, and prices are more or less shaded.

Coke.—For the first time in some weeks, an improvement can be reported in the coke trade, the new demand being more active, while prices are a shade firmer. Best makes of furnace coke for prompt shipment have sold recently at $1.50 to $1.55 per net ton at oven. The output in the upper and lower Connellsville regions last week was 322,765 tons, a gain over the previous week of about 1000 tons. We quote standard makes of furnace coke for spot shipment at $1.50 to $1.55 per net ton, at oven; on contracts for delivery over the year from $1.70 to $1.75 is being quoted by some coke operators, while others are firm, at $1.90 to $2, at oven. Best makes of 72-hour foundry coke are being held at $2.10 to dealers and from $2.25 up to $2.50, at oven, to consumers.

Iron and Steel Scrap.—The recent flurry in prices of scrap, which put the market up fully $1 a ton or more, seems to be over for the time being. Although prices are firm, the new inquiry is not so active. The market went up so fast for some weeks that several large consumers are now disposed to go slow, to see if the higher prices will hold. Actual sales in the past week have been light, but there is no disposition on the part of dealers to shade prices to secure business, and they continue to quote as follows per gross ton, f.o.b. Pittsburgh, or elsewhere as noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	$14.75 to $15.00
No. 1 foundry cast	14.50 to 14.75
No. 2 foundry cast	13.75 to 14.00
Bundled sheet scrap, at point of shipment	11.00 to 11.25
Rerolling rails, Newark and Cambridge, Ohio, and Cumberland, Md.	15.00 to 15.25
No. 1 railroad malleable stock	13.25 to 13.50
Grate bars	11.25 to 11.50
Low phosphorus melting stock	17.25 to 17.50
Iron car axles	24.75 to 25.00
Steel car axles	20.50 to 20.75
Locomotive axles	24.25 to 24.75
No. 1 busheling scrap	12.50 to 12.75
No. 2 busheling scrap	9.00 to 9.25
Old car wheels	13.75 to 14.00
Sheet bar crop ends	16.00 to 16.25
*Cast iron borings	9.50 to 9.75
*Machine shop turnings	10.25 to 10.50
Old iron rails	16.00 to 16.25
No. 1 wrought scrap	14.50 to 14.75
Heavy steel axle turnings	10.25 to 10.50
Stove plate	11.50 to 11.75

* These prices are f.o.b. cars at consumers' mill in the Pittsburgh district.

Chicago

FISHER BUILDING, March 1, 1911.—(*By Telegraph.*)

An optimistic tendency prevails throughout the entire market. Specifications and new orders for crude and semi-finished materials, as well as for nearly the entire list of rolled products, are increasing. This was not checked by the railroad rate decisions of the past week, being the outgrowth of improved demand for the products into which this raw material enters. Railroad spikes will be advanced $1 per ton March 1, and it is rumored that advances in other track supplies may follow. The brisk demand for wire products continues, with prices very firm. Local scrap yard stocks are low, but large accumulations remain in the hands of railway companies. Railroads are ordering freely of structural shapes and plates. No. 2 furnace was blown in at Joliet on Monday, making three blast furnaces now operating there. The Gary merchant mills will go in operation for a workout trial this week, and the 60-in. plate mill at that place will be ready in 30 to 60 days.

Pig Iron.—The general tone of the market is very strong on all grades and particularly on Northern. One sale amounting to 10,000 tons of malleable iron for the last half has been made to a Milwaukee foundry by a furnace in the same city at a price in the neighborhood of $16, at the furnace. There are numerous inquiries for both Northern and Southern pig iron, and the considerable tonnage placed has been made up of many small orders. No change is noted in the price of Southern iron, which remains at $11, Birmingham, for the first half, $11.25 for the third quarter and $11.75 for the fourth quarter. Orders extending through the entire last half, however, are being accepted on the basis of $11.50. On Northern pig iron, third quarter prices have advanced $1 per ton, or to $16.50, Chicago, for No. 2. It is stated that some sales have been made at this figure for the entire last half to favored customers, but sellers generally are restricting it to the third quarter and are indisposed to sell beyond that period. There is also an effort to secure if possible the maximum prices quoted below for the balance of the first half. It is interesting to note from conversations with buyers that present contracts for pig iron are made against actual orders for castings and not because of any general impression of expected advances in prices. A local iron house had been conducting an inquiry relative to the tonnage in foundry yards along with other questions, and has obtained information from 500 foundries to the effect that the supply of pig iron in their possession is sufficient for about 70 days' use. The following quotations are for March shipment, Chicago delivery:

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Lake Superior charcoal	$17.50 to $18.00
Northern coke foundry, No. 1	16.00 to 16.50
Northern coke foundry, No. 2	15.50 to 16.00
Northern coke foundry, No. 3	15.25 to 15.75
Northern Scotch, No. 1	16.50 to 17.00
Southern coke, No. 1	15.85 to 16.35
Southern coke, No. 2	15.35 to 15.85
Southern coke, No. 3	15.10 to 15.60
Southern coke, No. 4	14.85 to 15.35
Southern coke, No. 1 soft	15.85 to 16.35
Southern coke, No. 2 soft	15.35 to 15.85
Southern gray forge	14.60 to 15.10
Southern mottled	14.60 to 15.10
Malleable Bessemer	15.50 to 16.00
Standard Bessemer	17.40 to 17.90
Jackson Co. and Kentucky silvery, 6%	17.90 to 18.40
Jackson Co. and Kentucky silvery, 8%	18.90 to 19.40
Jackson Co. and Kentucky silvery, 10%	19.90 to 20.40

(*By Mail.*)

Billets.—There is so little new business coming forward that it is difficult to learn the temper of the local market. The best price the leading interest offers on open hearth forging billets is $30.60, base, Chicago, but other sellers who do not make so great a discard are said to be quoting as low as $28. Open hearth rerolling billets are quoted at $25.60, base, Chicago, and wire rods at $29, f.o.b. Pittsburgh.

Rails and Track Supplies.—Besides a good volume of track materials placed with local mills in the week under review, there were several thousand tons of standard section. The demand for light rails is quiet. Prices on track supplies are very firm, and an advance of $1 a ton in spikes will be made March 1. Advances in bolts and nuts may follow later. We quote standard railroad spikes at 1.70c. to 1.75c., base; track bolts with square nuts, 2.15c. to 2.25c., base, all in carload lots, Chicago. Standard section Bessemer rails, 1.28c.; open hearth, 1.34c. Light rails, 40 to 45 lb., 1.16c. to 1.20½c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12-lb., 1.25c. to 1.20½c., Chicago.

Structural Material.—Good conditions prevail in all branches of the trade. Fabricators are specifying very freely and mills have ample shipping instructions on their books. Better prices are also reported for the fabricated material, one or two active bidders for business in this market having filled up and retired. Contracts let last week include the following: City of Rock Island, Ill., bridge spans, 220 tons, let to the Clinton Bridge & Iron Company, Clinton, Iowa; coal storage building for M. A. Hanna & Co., Superior, Wis., 396 tons, to the American Bridge Company; Western Electric Company buildings at Hawthorne, Ill., 208 tons, to the Hansell-Elcock Company, Chicago; Columbia Falls, Mont., two 220-ft. pin spans, 138 tons, to the American Bridge Company; Pier No. 8, United States Navy Yard, Bremerton, Wash., 200 tons, to the American Bridge Company; Pacific Telephone & Telegraph Company, office building at Spokane, Wash., 720 tons, to the American Bridge Company; Interurban terminal building, Columbus, Ohio, 385 tons, to the McMyler-Interstate Company, Cleveland; Bucyrus-Vulcan Company, buildings at Evansville, Ind., 800 tons. We quote plain material from mill, 1.58c. to 1.63c., Chicago; from store, 1.80c. to 1.90c., Chicago.

Plates.—Specifications are considerably in excess of mill capacity. Railroads are pressing for early deliveries, and from other consumptive lines requests are also being made for the anticipation of contract quotas. The 60-in. plate mill at Gary is expected to be in operation within 30 to 60 days, which will relieve the pressure. We quote mill prices at 1.58c. to 1.63c., Chicago; store prices, 1.80c. to 1.90c., Chicago.

Sheets.—Current demand is equal to about 70 per cent. of mill capacity. Store trade is more active. Prices continue to show a strengthening tendency. We quote Chicago prices, carload lots, from mill: No. 28 black sheets, 2.38c.; No. 28 galvanized, 3.38c.; No. 10 blue annealed, 1.83c. Prices from store, Chicago, are: No. 10, 2.10c. to 2.20c.; No. 12, 2.15c. to 2.25c.; No. 28 black, 2.75c. to 2.85c.; No. 28 galvanized, 3.65c. to 3.75c.

Bars.—The only improvement noted in soft steel bars is a betterment in the volume of specifications. But even this is not so pronounced as to be a special cause for congratulation. Mills have ample specifications on their books for immediate needs, but additions to these are of the hand-to-mouth variety. Inquiry for 1911-1912 requirements has not yet commenced, the low price of bar iron being considered a temporary deterrent in this direction. Bar iron has improved in tone somewhat, but is still selling several dollars a ton below steel bars. The contract awarded at St. Louis last week to the American Car & Foundry Company for 1000 refrigerator cars may aid in narrowing this difference. The improvement in scrap has also served to strengthen iron prices, the minimum of the latter being 50 cents higher than a week ago. We quote as follows: Soft steel bars, 1.58c.; bar iron, 1.27½c. to 1.32½c.; hard steel bars rolled from old rails, 1.30c. to 1.35c., all Chicago. From store, soft steel bars, 1.80c. to 1.90c.

Wire Products.—Specifications continue to pour in from every section of the Central, Southern and Western States for all kinds of wire products. That this buying movement is not speculative is evidenced by frequent wires for prompt shipment and by complaints of slow freight deliveries. Urgent demand by active consumers is also evident. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.73c.; wire nails, 1.93c.; painted barb wire, 1.93c.; galvanized, 2.23c., all Chicago.

Cast Iron Pipe.—The demand continues active for all sizes of cast iron pipe. The city of Duluth, Minn., closed with the leading interest for 3000 tons of 6 to 20 in., and Rockford, Ill., for 700 tons. Gas companies are inquiring freely, as are numerous municipalities, but railroad buying is somewhat quiet. Prices continue firm, as follows, per net ton, Chicago: Water pipe, 4-in., $25.50; 6 to 12 in., $24.50; 16-in. and up, $24, with $1 extra for gas pipe.

Old Material.—Speculative forces in recent control seem to have spent themselves against the adverse rate decisions of the Interstate Commerce Commission, and the certainty of continued advances in local scrap seems to have been temporarily averted. The entire scrap market is sentimentally weaker, and a few grades actually so. An optimistic opinion, however, seems to prevail, principally as a result of betterment in the bar and pig iron markets. Local scrap yards are comparatively bare, stocks being mainly in the hands of railroads. The Chicago, Burlington & Quincy Railroad list mentioned last week closed February 28, and the price received for 50 tons of car wheels mentioned was $13.75 per ton. The Rock Island Railroad is out with a list closing May 2, which totals 3000 tons, and the Great Northern with one approximating 10,000 tons, which closes March 1. The principal item on the Great Northern list is 4700 tons of rerolling rails. The Santa Fe's 25,000-ton list is still unsold. Prices are for delivery to buyers' works, all freight and transfer charges paid, and are as follows per gross ton:

Old iron rails	$15.50 to $16.00
Old steel rails, rerolling	13.50 to 14.00
Old steel rails, less than 3 ft.	12.75 to 13.25
Relaying rails, standard sections, subject to inspection	23.00 to 24.00
Old car wheels	13.25 to 13.75
Heavy melting steel scrap	12.00 to 12.50
Frogs, switches and guards, cut apart	12.50 to 13.00
Shoveling steel	11.50 to 12.00

The following quotations are per net ton:

Iron angles and splice bars	$13.00 to $13.50
Iron arch bars and transoms	15.25 to 15.75
Steel angle bars	11.50 to 12.00
Iron car axles	19.25 to 19.75
Steel car axles	18.00 to 18.50
No. 1 railroad wrought	12.75 to 13.25
No. 2 railroad wrought	11.75 to 12.25
Steel knuckles and couplers	11.50 to 12.00
Locomotive tires, smooth	17.50 to 18.00
Steel axle turnings	8.00 to 8.50
Machine shop turnings	7.00 to 7.50
Cast and mixed borings	6.00 to 6.50
No. 1 busheling	10.25 to 10.75
No. 2 busheling	7.75 to 8.25
No. 1 boilers, cut to sheets and rings	9.00 to 9.50
Boiler punchings	13.00 to 13.50
No. 1 cast scrap	12.25 to 12.75
Stove plate and light cast scrap	10.50 to 11.00
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.00 to 10.50
Pipes and flues	9.00 to 9.50

Cincinnati

CINCINNATI, OHIO, February 28, 1911.

Pig Iron.—The opening of their books for the third quarter and last half delivery on the part of several furnaces has brought out a comparatively large number of inquiries and orders, especially for Southern foundry and Northern malleable. Consumers who have not covered for nearby requirements are also coming into the market. Jackson County high silicon is in better demand, and there is an improved inquiry for Northern foundry. Among recent sales of Southern foundry No. 2 is one for 2500 tons to a nearby agricultural manufacturer, with shipments scattered through the remainder of this year. For delivery from July to December, 1000 tons was sold a St. Louis firm at $11.50, at furnace. A Michigan melter took 2000 tons on a basis of $11 for the second quarter and $11.50 for that shipped during the third quarter. For July, August and September 2000 tons changed hands at $11.50, Birmingham, and there are numerous other lots running from 100 to 300 tons. It is stated that one or two Southern furnace interests have taken on some business for the third quarter based on $11, but the quotable price for any deliveries after July 1 is $11.50. For spot shipment there is no Southern foundry No. 2 obtainable below $11. An Indiana company bought for last

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half shipment 5000 tons of malleable for delivery from April to July inclusive. A Western manufacturer purchased 1000 tons of malleable at $14, at furnace, and 500 tons was taken by an Indiana concern for July to September shipment, at $14.25, Ironton. Among sales of Jackson County silvery is one for 500 tons to a southern Ohio consumer and 600 and 2000 tons, respectively, for Michigan purchasers for third quarter shipment. Northern foundry No. 2 is firm at $14, Ironton. Based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows, for first quarter:

Southern coke, No. 1 foundry	$14.75
Southern coke, No. 2 foundry	14.25
Southern coke, No. 3 foundry	13.75
Southern coke, No. 4 foundry	13.50
Southern coke, No. 1 soft	14.75
Southern coke, No. 2 soft	14.25
Southern gray forge	13.00
Ohio silvery, 8 per cent. silicon	17.70
Lake Superior coke, No. 1	15.70
Lake Superior coke, No. 2	15.20
Lake Superior coke, No. 3	14.70
Standard Southern car wheel	25.25
Lake Superior car wheel	19.50

Coke.—There are three small inquiries out for furnace coke, two of them for 5000 tons each and one for 3000 tons, the latter recently mentioned. Some of this is wanted for spot shipment, but the bulk of it is for delivery the remainder of the year. Connellsville furnace coke, for spot shipment, shows a little improvement in price and is now quotable around $1.60 to $1.65 per net ton oven, with a few cents advance on contracts. Pocahontas and Wise County spot shipment prices are between $1.65 and $1.75, the latter figure representing also about the price for last half shipment. Foundry coke is very quiet, and prices are unchanged. For prompt shipment $2 per net ton oven is quoted in all three districts, with an average advance of 25c. per ton asked on time contracts.

Finished Material.—The improvement previously noted in practically all lines continues, and while sales continue to be confined mostly to small tonnages, there have been a few nice sized contracts booked. The inquiry is good and both the agencies and warehousemen feel very much encouraged. The Pittsburgh mill price is 1.40c. on steel bars, plates, beams and channels, and the warehouse quotations are from 1.80c. to 1.90c.

Old Material.—There was a spurt of activity reported by several dealers lately, but the past two or three days has seen conditions fall back into the same old rut. There is, however, more scrap moving quietly than there was the latter part of last month. Quotations are unchanged and prices for delivery in buyers' yards, southern Ohio and Cincinnati, are as follows:

No. 1 railroad wrought, net ton	$12.00 to $12.50
Cast borings, net ton	5.00 to 5.50
Steel turnings, net ton	6.00 to 6.50
No. 1 cast scrap, net ton	11.00 to 11.50
Burnt scrap, net ton	8.00 to 9.00
Old iron axles, net ton	17.50 to 18.50
Busheled sheet scrap, gross ton	8.50 to 9.00
Old iron rails, gross ton	14.50 to 15.50
Relaying rails, 50 lb. and up, gross ton	21.50 to 22.50
Old car wheels, gross ton	12.00 to 12.50
Heavy melting steel scrap, gross ton	11.00 to 11.50

Philadelphia

PHILADELPHIA, PA., February 28, 1911.

While the freight rate decision had a checking influence in some directions, the restriction in railroad buying will not, it is believed, be as extensive as was first anticipated. The hesitancy noted in the general iron and steel trade is considered of a sentimental nature, and will, it is thought by close observers of trade conditions, be of short duration, as the basic conditions underlying the trade are unchanged. The movement in both crude and finished materials has been well maintained. Pig iron sales have, if anything, slightly increased, and some makers have advanced quotations for foundry grades, although recently quoted prices can still be done. Basic iron has sold at an advance of 50c. above the recent market for prompt shipment, and a further advance of 50c. for third quarter delivery is asked. Sales of gray forge iron at higher figures are also reported. There has been a decidedly better run of business in structural material, plates continue fairly active, but billets and sheets have been in less urgent demand. Both refined iron and steel bars are in moderate demand, with prices firm. Coke remains quiet. While hesitancy is to be noted on the part of buyers of old material, the market is holding its own.

Iron Ore.—One cargo, about 5000 tons, of East Coast Spanish ore, for early delivery, has been sold at 7½c. per unit, on dock at this port, and some further business is under negotiation. Importations here during the week comprised one cargo of 6000 tons, valued at $16,500.

Pig Iron.—While here and there a little hesitancy is shown by buyers, due to the combined influences of the rate decisions and slightly higher quotations on the part of some producers, the general volume of business transacted in this district during the week has been fully maintained, and reports received from sellers show the aggregate sales to have been larger. There is a very good inquiry for various foundry grades, both for near future as well as extended delivery, and the recent minimum price level, $15.50, delivered, for No. 2 X foundry, has not been shaded, while sellers report less difficulty in obtaining the recent high range, $15.75, on fair sales, and in a few instances $16 continues to be obtained for odd lots from regular customers, who will not change their mixture for the difference in price, although $16 is considered above the general market. Sales in lots of 200 to 1000 tons of standard brands for early delivery at both $15.50 and $15.75, delivered, for No. 2 X are reported, and, while consumers are in the market for more extended delivery, sellers still hold back on anything on which shipment extends beyond the first half of the year. Sales of moderate lots of No. 3 foundry are reported at $15, delivered. A number of sellers refuse to shade $15.25 for No. 2 plain, although $15 can in some instances still be done. Malleable iron makers are making inquiries for both coke and charcoal malleable, but no sales have been reported. The movement in Virginia foundry irons has been more active; little business at $13.50 for No. 2 X foundry for strictly second quarter has been done in this territory, as the majority of the sellers are still willing to accept $13, furnace, for that grade, for delivery during the next three months, and have taken considerable business, mostly in small lots, at that basis. Quite a large tonnage of low grade Virginia foundry iron has been sold to the cast iron pipe makers in that district. There has also been some movement in low grade iron in this territory. One Delaware River foundry has purchased several thousand tons, while another is in the market for 4000 tons for delivery in March and April. Forge iron is stronger; a sale of 1000 tons at $14, furnace, is reported, which would be equal to $14.50 to $14.75, delivered in this immediate vicinity. Further inquiry from basic consumers is to be noted, both for prompt, second and third quarter shipment. One sale of several thousand tons for early shipment is reported at $15, delivered, while for extended shipment sellers appear to be holding firmly at $15.50. Small sales of low phosphorus iron at the market are reported. Prices generally are firmer, producers and cellers apparently not being affected by the recent disturbing factor in the trade and are looking forward to a higher range of quotations. The following range about represents the market for prompt deliveries in buyers' yards in this district:

Eastern Pennsylvania, No. 2 X foundry	$15.50 to $15.75
Eastern Pennsylvania, No. 2 plain	15.00 to 15.50
Virginia, No. 2 X foundry	15.80 to 16.00
Virginia, No. 2 plain	15.80 to 16.00
Gray forge	14.50 to 14.75
Basic	15.00
Standard low phosphorus	21.00 to 21.50

Ferromanganese.—There is almost a total absence of inquiry from consumers in this district. Some sellers report a little demand from the West, but no sales are announced. Prices of 80 per cent. are nominally $37.50, Baltimore, for prompt, and $38 for forward shipment.

Billets.—Eastern producers note a slight falling off in the demand. Consumers show hesitancy in placing orders for any large quantities, confining their buying to small, prompt lots. Orders for forging billets continue of somewhat larger size than for rolling steel. Notwithstanding reports that prices can be shaded, Eastern mills report sales at the recent level, $25.40, delivered in this district, for open hearth rolling billets, and $30.40 for ordinary forging billets.

Plates.—Business continues fairly active, and, while there has been a little hesitancy shown by some consumers, mills on the average are getting enough new work, together with specifications on old contracts, to enable them to maintain their recent productive rate. As a rule orders continue small, but the number is sufficiently large to be quite encouraging. Prices are being fully maintained at 1.55c. minimum, for ordinary plates delivered in this vicinity, and sellers show no disposition to contract for extended shipment.

Structural Material.—More business of fair size has recently developed in building work, both in this and the nearby territory. The Baltimore Bridge Company has the contract for the Woodward Building in Washington, D. C., requiring 1500 tons of material. Bids against revised plans for the new building for the Baltimore Bargain House, original plans requiring 3000 tons, will be opened March 6, while bids for the Curtis Warehouse in this city, requiring 3000 tons, go in this week. There has also been a very fair share of miscellaneous work and mills look forward to more active conditions in the near future. Prices of plain shapes are being maintained at 1.55c., minimum, but com-

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petition for fabricated work is reported as still being very sharp, resulting in comparatively low prices.

Sheets.—Buying has been less active. Eastern mills have in instances decreased their productive rate and depend on day to day orders to maintain their present rate of output. But little forward business is on makers' books and the outlook is hardly as encouraging as it was. Prices, however, are being fully maintained, the following range being named for early shipment by Eastern makers: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 and 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—Not as much business is being offered and the trade feels the effect of the lessened buying. Mills, however, maintain recent gains and are holding prices firmly; in fact, specifications must be desirable to obtain the minimum rate, 1.37½c., delivered in this district, for refined iron bars, while small lots command 1.42½c. Steel bars are firm at 1.55c., delivered in this vicinity.

Coke.—While there is some little business pending, both in furnace and foundry grades, the market generally continues quiet. Sellers are not inclined to force business for forward delivery, and prices for prompt lots vary according to individual conditions. While $2 to $2.25 per net ton at oven represents the general market for foundry coke, as high as $2.40 has been done on some brands. Furnace coke ranges from $1.60 to $2 at oven, dependent on quality, quantity and delivery. The following range represents the market per net ton for deliveries in this district:

Connellsville furnace coke	$3.85 to $4.25
Foundry coke	4.25 to 4.50
Mountain furnace coke	3.45 to 3.85
Foundry coke	3.85 to 4.10

Old Material.—The demand has developed irregularity. In some instances consumers are entirely unaffected by the rate decisions and continue to take scrap at recent quotations, but others show hesitancy and name lower offering prices, although no instance can be learned where business has been done under the recent market. The rapid advance in prices has, however, been checked. While $15, delivered, was paid for No. 1 heavy melting steel in 1000-ton lots last week, consumers are in some cases not offering over $14, but get no steel, as merchants pay higher prices, applying purchases against recent sales. The rolling mill grades do not seem to be as much affected as do the steel making grades of scrap, and moderate sales of the former continue to be made at recent prices. Quotations show but little change, the following range of the market about representing sellers' views for deliveries in buyers' yards, eastern Pennsylvania and nearby points, carrying a freight rate from Philadelphia ranging from 35c. to $1.35 per gross ton:

No. 1 steel scrap	$14.50 to $15.00
Old steel rails, rerolling	15.75 to 16.25
Low phosphorus	18.50 to 19.00
Old steel axles	21.00 to 21.50
Old iron axles	26.00 to 27.00*
Old iron rails	18.50 to 19.00
Old car wheels	14.00 to 14.50
No. 1 railroad wrought	17.50 to 18.00
Wrought iron pipe	14.00 to 14.50
No. 1 forge fire	12.25 to 12.75
No. 2 light iron	8.00 to 8.50*
Wrought turnings	10.00 to 10.50
Cast borings	9.50 to 10.00
Machinery cast	14.50 to 15.00
Railroad malleable	12.50 to 13.00*
Grate bars	12.00 to 12.50
Stove plate	11.50 to 12.00

* Nominal.

Birmingham

BIRMINGHAM, ALA., February 27, 1911.

Pig Iron.—The volume of business in this market in the past week was more satisfactory than for any week since January 1, some 10,000 tons in comparatively small lots having been sold. The sales were in the main for delivery in the next 90 days, with one or more round lots for shipment over the first half. For shipment through the third quarter $11.50 for No. 2 foundry has generally been named. Such a basis has not become effective, but $11 per ton is now considered minimum for any delivery. Three of the leading producers would not accept third quarter shipments at lower than $11.50 per ton, while two smaller concerns quote this figure for prompt or nearby shipments. The fact that practically all pig iron warrants have been withdrawn from the market is noteworthy, especially since no preparations are under way for any material increase in production. There is a pronounced shortage of high silicon iron and of grades below No. 4 foundry, with but little change in the percentage of such grades being produced. The sale of a small lot of gray forge for spot delivery was made last week at $10, Birmingham, and mottled is sold at 25c. less. The most significant inquiry pending is for 2500 tons of Nos. 2 and 3 foundry for shipment over the next six months. This is for a stove manufacturer, and will probably be placed this week. A manufacturer of pumps is in the market for 750 tons for spot shipment, and a pipe manufacturer recently asked for a round tonnage for shipment over the first half and through the third quarter, his offer representing a slight concession from $11, Birmingham.

Cast Iron Pipe.—It is understood that a contract for 3500 tons of water pipe for Minneapolis, Minn., was placed with a Southern manufacturer last week. The figures have not been given out, neither has there been an announcement of the details in the contract for 3000 tons of water pipe understood to have been placed by the city of Duluth. The prices received for the small lots placed from time to time are very satisfactory, and in view of a stronger pig iron market an advance will no doubt be made. Only about 50 per cent. of the available producing capacity is now in operation, but those plants being operated are well supplied with orders. In a particular instance quotations on any additional tonnage are being made with some reluctance. We quote the following prices for water pipe per net ton, f.o.b. cars here, which are believed to correctly represent the market: 4 to 6 in., $21; 8 to 12 in., $20; over 12 in., average $19, with $1 per ton extra for gas pipe.

Old Material.—Dealers' quotations are unchanged, but the market is considerably more active. The increased operation at steel mills has brought about a better demand, and there is a considerably larger consumption by the small foundries. Recent additions to dealers' stocks are comparatively small. We quote asking prices as follows, per gross ton, f.o.b. cars here:

Old iron axles	$14.00 to $14.50
Old iron rails	12.50 to 13.00
Old steel axles	12.50 to 13.00
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	9.50 to 10.00
No. 1 country wrought	8.00 to 8.50
No. 2 country wrought	7.50 to 8.00
No. 1 machinery	10.00 to 10.50
No. 1 steel	9.50 to 10.00
Tram car wheels	9.00 to 9.50
Standard car wheels	10.50 to 11.00
Light cast and stove plate	8.00 to 8.50

Buffalo

BUFFALO, N. Y., February 28, 1911.

Pig Iron.—A good volume of inquiry is reported and the trend of indications in this district seems to forecast a clearing up of the situation into a stronger market. About 15,000 tons of foundry grades, 12,000 tons of basic and some malleable are under negotiation. Some improvement in placement is noted, there being a steady run of small lot business in regular foundry grades and an increase in specialties, such as high phosphorus, high silicon and charcoal irons. There has also been increased buying of gray forge for rolling mill use. The New York State Steel Company's furnace, which has been out of blast for some time, was blown in again February 25. Price schedules remain about the same as last reported, with a continued tendency toward stiffening on the part of furnaces. Business for last half delivery is not being considered, except at a material advance over current quotations, furnaces being unwilling to name last half prices until the price of ore for the 1911 period of navigation is determined. For first half delivery we quote as follows, f.o.b. Buffalo:

No. 1 X foundry	$14.50 to $15.00
No. 2 X foundry	14.25 to 14.75
No. 2 plain	13.75 to 14.25
No. 3 foundry	13.75 to 14.00
Gray forge	13.50 to 14.00
Malleable	14.25 to 14.75
Basic	14.50 to 15.00
Charcoal	17.25 to 18.00

Finished Iron and Steel.—Current orders and specifications for most classes of finished materials have shown good volume during the week, although in some quarters a disposition has developed to wait until it is known whether there will be a special session of Congress and the question of tariff revision opened up. Prior to this, there had been an increasing inclination among purchasers to close for forward requirements. Several inquiries from manufacturing consumers desiring to purchase for third and last quarters at current prices were turned down by the mills, which are not inclined to commit themselves beyond the first half of the year. Prices for current delivery are being well maintained. The demand for sheets, both black and galvanized, is active and prices are firm. A good demand is also noted for hoop and band steel. In the Canadian export trade there is every indication of a continued strong demand in all lines and contracts for good tonnages have been closed. There has been some inquiry for car wheels from traction companies, also for special work in the way of crossings for electric and steam railroad lines to be put under construction this spring and for other railroad and car materials. In fabricated structural lines the inquiry has been

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light and confined to small jobs; but specifications on one or two local structures of considerable importance are expected to be out soon, including a 10-story building for light manufacturing purposes. The George Kellogg Structural Company, this city, was last week awarded the contract for fabrication and erection of the steel for a high school building at Ashtabula, Ohio, about 150 tons, and the Buffalo Structural Steel Company took a contract for steel for the first of the Buffalo Orphan Asylum buildings, 100 tons.

Old Material.—The market is less active than for a number of weeks. The slackening, which is believed to be only temporary, evidently being due to purchasers awaiting the outcome of the effect on the railroads of the recent freight rate decisions. Dealers appear to be of the opinion that the decisions will not materially affect business in general and that there will soon be a resumption of active demand, as the mills are continuing to take shipments freely on their present contracts. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$13.75 to $14.25
Low phosphorus steel	18.00 to 18.50
No. 1 railroad wrought	15.75 to 16.25
No. 1 railroad and machinery cast scrap	14.75 to 15.25
Old steel axles	20.50 to 21.50
Old iron axles	24.00 to 25.00
Old car wheels	15.00 to 15.50
Railroad malleable	14.25 to 14.75
Boiler plate	11.75 to 12.25
Locomotive grate bars	11.75 to 12.25
Pipe	11.25 to 11.75
Wrought iron and soft steel turnings	7.50 to 8.00
Clean cast borings	7.00 to 7.25

St. Louis

ST. LOUIS, Mo., February 27, 1911.

The past week has shown an improvement in the demand for all finished iron and steel products. The leading sales agencies for pig iron also find the situation improving, both as to the demand and tone of the market. Scrap iron and steel have advanced. The volume of general business is greater at St. Louis than for the same week last year. Coke is quiet and easier. The demand for metals is fairly good and for finished metals is reported excellent.

Pig Iron.—A good buying movement in pig iron is now on and sales aggregating around 12,000 tons are reported by the leading sales agencies in the past week. Merchant sellers also did a fair business in a jobbing way. There is only a limited volume of inquiry out, but this, as explained by one of the leading houses, is owing to the activity among the sellers, who in seeking new business have anticipated inquiries. There is practically no speculative buying, but it is noted that many buyers are desirous of making contracts to cover the remainder of the year, provided they can secure iron at but a small premium over nearby deliveries. But few furnaces are making prices for delivery beyond July 1, and where prices are quoted a premium is asked. Sales aggregating 7000 tons of Missouri basic for delivery over the second quarter are reported made to local steel foundries. An inquiry is out by an east side steel foundry for 6000 tons of basic for shipment over the last half. We quote Southern No. 2 foundry for shipment to July 1 at $11, Birmingham; for shipment over the third quarter, $11.25; for the last quarter, $11.50, and this price is named for shipment over the last half. Northern No. 2 foundry is quoted at $14, Ironton, for shipment over the remainder of the first half.

Coke.—Merchant sellers report a very good inquiry for coke from small consumers in St. Louis territory, but with the leading sales agencies the inquiry is light, only one office reporting any business of consequence for the past week. This sales agency mentions the sale of 2000 tons of foundry coke for future delivery. The tone of the market is weak. We quote for 72-hour standard Connellsville foundry $2.15 to $2.25 per net ton, at oven, for shipment over the remainder of the year. Special brands and carload lots are held 25c. to 50c. per ton higher.

Finished Iron and Steel.—The leading interest reports having closed a contract with the United Railway Company for requirements in rails for the current year; also has received instructions to make delivery of 4000 tons of rails by an outside railroad to apply on previous contract. The demand for structural material is fair, coming mainly from fabricators. Wagon and implement makers and jobbers are in the market for bars, and for track material the inquiry is good. A leading independent interest states that for all its lines the inquiry is increasing each week. Specifications in prior contracts are coming in freely.

Old Material.—Dealers state that the inquiry from consumers is gaining in volume, and prices are held higher in anticipation of a further improvement in the demand and in sympathy with the stronger market for iron, both crude and finished. The Central & Eastern Illinois Railroad is out with a list of 400 tons and the St. Louis & San Francisco 250 tons. The situation on relaying rails is unchanged. We quote dealers' prices, per gross ton, f.o.b. St. Louis:

Old iron rails	$14.00 to $14.50
Old steel rails, rerolling	13.00 to 13.50
Old steel rails, less than 3 ft	12.50 to 13.00
Relaying rails, standard sections, subject to inspection	22.50 to 23.00
Old car wheels	13.00 to 13.50
Heavy melting steel scrap	12.00 to 12.50
Frogs, switches and guards, cut apart	12.00 to 12.50

The following quotations are per net ton:

Iron fish plates	$11.50 to 12.00
Iron car axles	19.00 to 19.50
Steel car axles	17.50 to 18.00
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	11.00 to 11.50
Railway springs	10.50 to 11.00
Locomotive tires, smooth	16.50 to 17.00
No. 1 dealers' forge	9.50 to 10.00
Mixed borings	5.00 to 5.50
No. 1 busheling	10.50 to 11.00
No. 1 boilers, cut to sheets and rings	8.50 to 9.00
No. 1 cast scrap	12.00 to 12.50
Stove plate and light cast scrap	9.50 to 10.00
Railroad malleable	9.00 to 9.50
Agricultural malleable	8.50 to 9.00
Pipes and flues	8.50 to 9.00
Railroad sheet and tank scrap	8.50 to 9.00
Railroad grate bars	8.50 to 9.00
Machine shop turnings	7.50 to 8.00

The American Refrigerator Transit Company, which is controlled by the Missouri Pacific and Wabash railroads, has placed with the American Car & Foundry Company a contract for 1000 refrigerator cars for delivery in May and June.

It is reported that the Springfield Traction Company and the Springfield Gas & Electric Company, Springfield, Mo., have been purchased by a syndicate of New York City capitalists. The purchasing syndicate, it is said, intends to carry out many improvements started by the old companies.

The contract for the building of the St. Louis-Kansas City Electric Railway has been awarded to the L. J. Smith Construction Company, Kansas City, Mo. The contract calls for the building of 140 miles of road at an approximate cost of $10,000,000. Work will be started as soon as the weather permits. The officers of the company are D. C. Nevin, president; J. H. Berkshire, vice-president; B. L. Dorsey, second vice-president; H. E. Insley, secretary and auditor; H. V. Johnson, treasurer.

The contracts for the construction of four highway bridges over Cahokin Creek have been let by the East St. Louis Commissioners to the Joliet Bridge & Iron Company for $54,000.

During 1910 the St. Louis industrial campaign established within the city's limits 135 manufactories.

San Francisco

SAN FRANCISCO, February 21, 1911.

The coast market shows considerable improvement. Orders are being closed on a number of the larger inquiries which have come up within the last two months, and merchants are inclined to enter the market in a larger way than for some time. There is still much room for improvement, but the movement in most departments is slightly larger than at this time last year, and the amount of business in prospect is steadily increasing. With the approach of spring and an excellent agricultural outlook, the small consuming trade through the country is reviving, and a number of orders are coming out from manufacturing concerns. The larger railroads are in the market for ties and lumber, and numerous orders for rails are coming from logging interests, while pipe is in active demand for both municipal and private water systems. A better movement of supplies to the oil fields is expected with the close of the rainy season.

Bars.—A more active business is noted in soft steel bars. The small trade has been the principal feature for some time and the reduction of jobbing prices is causing no hesitation on the part of buyers. Several of the larger consumers have placed orders recently and more business of an important nature is expected in the near future. There is still considerable foreign material in the market and the importers are getting more or less new business, but a larger proportion is going to domestic mills than last year. Purchases of stock are still rather small and local conditions are unsatisfactory to jobbers. Rainy weather has retarded the movement of reinforcing bars, but a good volume of new buying is in sight. The principal business in immediate prospect is for the temporary City Hall, though a fair tonnage is also required for concrete buildings in the Presidio. Jobbing prices are low, in sympathy with soft steel. Bars from store, San Francisco, are quoted at 2c. for both iron and steel.

Structural Material.—Fabricating orders placed the past week include some which have been expected for months. The Lowell High School has been refigured, the Pacific Roll-

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ing Mill Company being the low bidder, though the award has not been announced. The Ralston Iron Works has taken about 450 tons for the Alcazar Theater. Milliken Bros., Inc., have taken several jobs, including about 700 tons for the Lincoln High School, Portland, Ore.; a similar amount for the Los Angeles County Hospital, and an order from the Southern Pacific Railroad for 300 power transmission poles, composed of latticed angles, aggregating some 600 tons, to be used in the Oakland system. No award has been made on the Masonic Temple. Considerable small work is being booked by local contractors. The coming month, however, should bring out quite a large tonnage. The temporary City Hall, on which bids will be taken in a few days, will require some 600 tons of steel columns. Bids have been taken on the Bultnomah Athletic Club at Portland, Ore., and a contract is expected next week on an addition to the court house in that city. The Oakland City Hall job will come up for figuring in a week or two. A steel or suspension bridge is to be built over the American River near Auburn, Cal., and there is some talk of a new bridge over the same stream at Sacramento. Numerous smaller bridge jobs are coming up in various places. Plans are being completed for a 12-story annex to the Hotel Portland, Portland, Ore. It is reported that plans will be drawn shortly for the United States Subtreasury Building in San Francisco. Some steel will be required for a Presbyterian church in this city. The city of Oakland is working on a project for a large municipal auditorium.

Rails.—A number of individual purchases recently closed are somewhat larger than the average, though the total movement has been quite satisfactory since the first of the year. While some of the interurban lines in the interior are coming into the market, a large proportion of the present business comes from logging interests in the North. Buyers show less tendency to delay, being anxious to have the material on the ground at the end of the rainy season. A number of new logging and electric lines are planned for construction the coming summer, and several fairly large inquiries have come up since the first of the month. A great deal of work is to be done in the next few years on the Southern Pacific electric roads in Los Angeles and vicinity.

Sheets.—The jobbing business continues active for this season and local merchants are taking more interest in the market. They are beginning to realize the underlying firmness and a number of large orders for stock have recently been placed. The city of Los Angeles is taking bids on a large lot of sheet steel pipe.

Plates.—Current business in tank plates remains about as before, but plans are being made for tank work which may require a heavy tonnage. The Independent Oil Producers' Agency is considering the construction of tanks with a capacity of 4,000,000 barrels, but has not decided whether to use steel or concrete. Plans are also being made for a number of new gas holders in various parts of the State.

Merchant Pipe.—There has been too much wet weather for much activity in the small trade, but under the conditions the distributive movement is fairly good. The usual spring demand is expected to show itself within the next month, and conditions are favorable both here and in the country. Jobbers are increasing their supplies to some extent, but not beyond the requirements of the immediate future. The city of San Jose, Cal., has been in the market for a lot of 2 and 3 in. black wrought iron pipe. Some new inquiry is coming from the oil fields and a fair movement to that territory is expected in another month, though the difficulty of delivery prevents much business at present.

Cast Iron Pipe.—Prices are held on a slightly higher level than for some time past, and as orders were placed for the most pressing needs before the advance there is less business than in January, though many small orders are still coming in. The requirements of the coming season are still very large in all the coast States, as several gas and water works projects are under way, in each of which a heavy tonnage will be used. Development will be especially active in southern California gas systems. The town of Madera, Cal., has received bids on 400 tons, and Oceanside, Cal., will open bids for 300 tons March 1. Large inquiries are coming from the Oregon Power Company, Portland, Ore., and the Everett Water Company and Everett Gas Company, Everett, Wash.

Pig Iron.—A local firm has received about 1400 tons of European foundry iron recently. Considerable Chinese iron has also arrived, but a large part of it was reshipped to Irondale, Wash., 10,000 tons of Chinese iron having been received there in the last six months. The local market is inactive, the bulk of the business being in small lots. There is considerable irregularity in prices, most importers asking $23 for ordinary grades of English, Continental and Chinese foundry iron, though occasional offerings are reported at lower figures. There is no movement of domestic foundry iron of any consequence.

Old Material.—Most descriptions are quiet, though good wrought scrap finds a ready market and there is considerable inquiry for steel melting scrap. Some of the larger buyers, however, are slow in placing their contracts. A few dealers are accumulating considerable stock, but the tonnage on the market is much lighter than a few years ago. Cast scrap, except of the heaviest description, finds very little demand. The Sanitary Reduction Works is melting a large amount of scrap for sashweights. Quotations are as follows: Cast iron scrap, per net ton, $18; steel melting scrap, per gross ton, $12.50; wrought scrap, per net ton, $12 to $15; re-rolling rails, per net ton, $15.

Metals.—The city of Portland, Ore., is in the market for 100 tons of lead. Shipments of copper from Puget Sound to Europe have been resumed, after an intermission of over a year. According to reports from Alaska, the output of copper in that territory will large this year.

Cleveland

CLEVELAND, OHIO, February 28, 1911.

Iron Ore.—Consumers are taking a little more interest in ore prices, now that inquiries are coming out for pig iron for the last half delivery, but there is no indication that ore sellers will take up the matter in the near future. Last year the price was established by one sale of a round tonnage and there is a possibility that the price may be fixed in a similar way this year without a meeting of the leading ore operators to discuss the situation. So far, in the few orders that have been placed, the buyers have agreed to pay whatever is later fixed as the market price. Shipments from the docks to furnace yards have improved slightly, but are still light. We quote prices as follows: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

Pig Iron.—There is an improved demand for all grades and inquiries are now pending for quite a number of lots of foundry, basic and malleable grades ranging from 2000 to 5000 tons. The larger inquiries are mostly from Western points, and in most cases are for second and third quarter delivery. There is also an inquiry for 1000 tons of Bessemer for early shipment. The market in this immediate territory shows more activity in Southern as well as Northern foundry iron, and a fair volume of business is coming out in high silicon. Prices are firm at $13.75 to $14, Cleveland and Valley furnaces, for No. 2, most sellers holding to the latter price for delivery until July 1. Several furnaces are still declining to quote beyond that date. Others have taken on a limited tonnage for the last half at an advance of 50c. a ton over current prices. The sale of a small tonnage of Southern is reported at $11.50, Birmingham, for No. 2 for the last half. We note the sale of two lots of No. 2 Southern, of 500 tons each, at $11, Birmingham, for the first half. A local manufacturer of malleable castings is in the market for 2000 tons of malleable for its Indianapolis plant for the second quarter. A Syracuse, N. Y., implement maker wants 3000 tons of Southern analysis iron for the last half, and a Cleveland foundry has an inquiry for 1000 tons of Southern. From Mansfield, Ohio, there is an inquiry from a stove manufacturer for 800 to 1000 tons of Southern No. 2 soft for the last half, and another inquiry from the same city is for 300 to 400 tons each of Northern and Southern for the same delivery. Another Ohio consumer wants 800 tons, half Northern and half Southern, for the second and third quarter. For prompt shipment and the first half we quote, delivered, Cleveland, as follows:

Bessemer	$15.90
Northern foundry, No. 1	14.50
Northern foundry, No. 2	$14.00 to 14.25
Northern foundry, No. 3	14.00
Gray forge	13.75
Southern foundry, No. 2	15.35
Jackson Co. silvery, 8 per cent. silicon	18.50

Coke.—The market is inactive, but fairly firm. Practically the only sales reported are small lots of foundry grades for spot shipment. We quote standard Connellsville furnace coke at $1.45 to $1.50 per net ton, at oven, for spot shipment and $1.60 to $1.65 for the first half. Connellsville 72-hour foundry coke is held at $2 to $2.15 for spot shipment and $2.25 to $2.50 for the first half.

Finished Iron and Steel.—Orders in finished lines kept up the past week at about the same volume as in the previous two or three weeks, there being quite a satisfactory number of orders for small lots. When the freight rate decisions were first announced there appeared to be a general feeling that the expansion of business would be seriously checked. This has been followed, however, by the belief that at the most there will be only a temporary lull and that the removal of the uncertainty will eventually have a good effect on business conditions. So far the decisions have not resulted in any suspension or cancellation of orders in the local market. Some steel bar contracts are being placed

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for delivery until July 1. Prices on steel bars, plates and structural material are firm at 1.40c., Pittsburgh. The demand for structural material is improving. With the opening of the spring building season, local fabricators report that they have a good amount of small work on hand. Inquiries for buildings requiring a round tonnage are slow in coming out. The ore handling plant to be erected by the Pennsylvania Railroad in Cleveland, for which it is expected the contract will be placed shortly, will require about 2000 tons of steel. The demand for sheets is moderate and prices are firm. There is a fair demand for iron bars and prices are a little firmer. We quote iron bars at 1.30c. to 1.35c., at mill.

Old Material.—The market had been quite active for part of the past week, but quieted down somewhat after the rate decisions. Business, however, has been mostly between dealers, a few of whom made sales at high prices, but some tonnage was sold for shipment to outside mills. Local consumers, however, do not appear to have been affected by the flurry and decline to take on tonnage except at prices considerably lower than the present quotations. With the exception of an advance in iron rails and borings, prices are stationary. The Erie Railroad will close March 1 on its usual tonnage. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$14.00 to $14.50
Old iron rails	17.00 to 17.50
Steel car axles	19.50 to 20.00
Heavy melting steel	13.25 to 13.50
Old car wheels	13.00 to 13.50
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	12.00 to 12.50
Railroad malleable	13.00 to 13.50
Light bundled sheet scrap	7.50 to 8.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$21.00 to $21.50
Cast borings	7.00 to 7.50
Iron and steel turnings and drillings	7.50 to 8.00
Steel axle turnings	9.00 to 9.25
No. 1 busheling	11.50 to 12.00
No. 1 railroad wrought	13.00 to 13.25
No. 1 cast	12.00 to 12.50
Stove plate	11.00 to 11.25
Bundled tin scrap	11.00 to 11.50

The German Iron Market

BERLIN, February 16, 1911.

Interest is concentrated on the meeting of the bar mills next week for the purpose of trying to perfect their organization. It appears more and more clear as the date draws near for the meeting that the biggest iron companies of the West are deeply interested in establishing a strong organization in the bar trade, since this is regarded a necessary step toward the renewal of the great Steel Works Union. The Gelsenkirchen Company, after Krupps the greatest iron and coal company of Germany, was not represented at last week's meeting, and this gave rise to a report that it was disposed to stay out of the combination; but it has just announced its purpose of being represented at next week's meeting. Hopes are, therefore, running high that the organization will be completed. It is understood that the form of contract drawn up for the organization provides for a drawback of 12 marks per ton on exported bars. It is added in the newspaper reports that this drawback is relied upon to throw a large volume of bars upon the foreign market and thus relieve the home trade.

The trade appears to be more than usually quiet this week, but the regular run of work and delivery of products are going on. In ores there are some large transactions under negotiation in the Siegen region. Ores on order are being called for with some urgency, and it is regarded as certain that consumption will increase within the next few months. The demand for foreign ores remains active. Pig iron continues to be bought for export, chiefly to Russia and Belgium, in considerable amounts. Some of the Siegen furnaces are now competing with the furnaces of the Essen Syndicate in hematite iron.

The mills buying steel material have begun to place contracts for their requirements for the June quarter, and are taking about the same amounts as for the current quarter. Export business in steel material continues good. The outlook for German business in England is reported to be better, since there is less competition from American and Belgian steel. Considerable amounts have been sold there for nearly four months ahead at about 86 marks for billets and 86 to 88 marks for muck bars. Considerable spring business in grooved and mining rails is reported, but steel rails of heavy sizes are quiet. The outlook for structural shapes has not improved, the promised revival of the building trade not yet having materialized.

Heavy plates for shipbuilding purposes are in good demand, and the shipyards continue to take in orders for steamers; nevertheless, it is reported that the heavy plate mills of the Siegen district have work for only about two weeks. Foreign buyers of heavy plates are trying to place orders pretty far ahead.

The value of Germany's exports of wire and wire products for last year is estimated at $53,000,000, which compares with a little less than $49,000,000 for 1909.

New York

NEW YORK, March 1, 1911.

Pig Iron.—The effort of producers to establish better prices may account in large part for the lighter buying of the past week. Two or three transactions of 1000 tons for delivery in the first half are reported, and one New Jersey company is in the market for 1000 tons for the same delivery. The most important sales of the week have been at the low prices recently reported, and the ability of the furnaces to secure a definite advance is now being determined. Virginia furnaces have taken some business in New England, including one lot of 1500 tons, following their recent considerable sales of pipe iron for Virginia consumption. New England buyers seem still to get the benefit of sharp competition, where more than ordinary lots for early use are involved. We quote, for tidewater delivery, as follows: Northern No. 1 foundry, $15.50 to $15.75; No. 2 X, $15.25 to $15.50; No. 2 plain, $14.75 to $15; Southern No. 1 foundry, $15.50 to $15.75; No. 2, $15 to $15.25.

Steel Rails.—The order of the Harriman lines is the next large one expected by the rail mills. It may amount to 150,000 tons or more for new work and replacements. The Atlantic Coast Line and the Chesapeake & Ohio have made purchases of several thousand tons each, and the Carnegie Steel Company has a contract for 2000 tons for the Cleveland, Akron & Columbus Railroad. The Wichita & Midland Valley Railway in Kansas has bought 7600 tons of 75-lb. Bessemer rails, which will be rolled at South Chicago. For the Kyoto, Japan, street railroad the United States Steel Products Company has sold 5000 tons of girder rails. A Rio Janeiro street railroad line has bought 2000 tons from the same company. The Pan-American Transcontinental of Uruguay is in the market for 500 tons.

Finished Iron and Steel.—No improvement was evident last week, and February closed a somewhat poorer month than January in all lines except bar iron. For the latter orders have continued to come in the past week in good volume. The buying of bar iron has been quite active for several weeks, and the extremely low prices reported about the first of the year are no longer obtainable. Plates for this territory and this season of the year are doing fairly well, but structural material orders are very slow in coming out in spite of the fact that achitects and engineers are unusually busy with building plans. The most important of pending matters closed last week was the contract for the shops for the Delaware & Hudson at Watervliet, N. Y., which went to the McClintic-Marshall Construction Company and will require between 3500 and 4000 tons. The same company obtained 450 tons for the Ontario & Western shops at Middletown, N. Y. The Baltimore Bridge Company has the 1500 tons for the Woodward building in Washington, D. C., for which F. T. Nesbitt & Co. are general contractors, and will use Bethlehem shapes for a part of the work. Ravitch Brothers have the general contract for the Fischel building, New York, which will require about 1000 tons. The American Bridge Company was awarded 800 tons for the addition to the Altman store, New York, and 140 tons in four small bridges for the Boston & Maine, and the Phœnix Bridge Company, 200 tons for three small bridges for the Reading & Columbia Railroad. Bids close March 2 on a hotel to be erected on Copley Square, Boston, 2700 tons. The Pennsylvania Lines West are in the market for about 2000 tons of bridge work for grade crossings at Cleveland. Prices are firm at the following quotations: Plain structural material, plates and steel bars, 1.56c. to 1.61c., and bar iron, 1.40c. to 1.45c., all New York. Plain material from store, New York, 1.85c. to 1.95c.

Ferroalloys.—The sale of about 6000 tons of ferrosilicon to a large Pittsburgh consumer by a company whose plant is on the American side of Niagara Falls at about $54.50, Pittsburgh, has strengthened the market, and other holders of domestic ferrosilicon are asking $55. Reports from England are that the foreign syndicate of ferrosilicon manufacturers has put the price up to £12 10s. a ton, for delivery over the last half, which, considering the duty and other costs of import, would bring the selling price here at about $73, Pittsburgh. At present, however, there is some foreign ferrosilicon in the country that might be had from $55 to $56. Sellers of ferrosilicon in New York are expecting a higher market. The ferromanganese situation is quiet; a few small lots are being called for, and the usual quotation is from $37.50 to $38, Baltimore.

Cast Iron Pipe.—The city of New Brunswick, N. J., February 24, bought 230 tons of water pipe from an eastern Pennsylvania manufacturer at a low price. The city of New York will open bids to-day for a contractors' job which will require 350 tons. Norwich, Conn., March 2, will open

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bids on 3000 tons of 16 to 24 in., the 24-in. comprising three miles. Hornell, N. Y., March 10, will award a contract for 1500 tons. The borough of Bristol, Pa., March 20, will open bids on about 10 miles of 4 to 14 in., and on a quantity of fire hydrants, stop valves, special castings, &c. Private buying appears to have subsided, as not much business of this character has been done in the past week. Competition continues keen, and prices are still under pressure. Carload lots of 6-in. can be had at $21 to $21.50 per net ton, tidewater.

Old Material.—The Isthmian Canal Commission, 24 State street, New York City, will open bids March 2 on 132 lb. of scrap wire screening, 6814 lb. of scrap rope and various quantities of rubber belting, hose, &c., now to be seen at the foot of Twelfth street, Hoboken, N. J., and will open bids March 4 on 4,442,500 lb. of scrap iron, to be delivered on cars at Port Richmond, Philadelphia, Pa. For a portion of the past week considerable activity prevailed in the local market. It was specially noteworthy in heavy melting steel scrap, of which several good sized lots were sold, among them being one of 2000 tons which brought $13. This was the high point of the market. While values of other grades of old material were affected sympathetically by the strength of steel scrap, the volume of business was not large. The rolling mills were especially conspicuous for their inactivity in buying. Cast scrap has been in but light demand. While no requests have been received to postpone shipments, dealers and consumers are now quite generally waiting to see more clearly the effect of the freight rate decisions. Meanwhile prices are quite firmly held, as follows, per gross ton, New York and vicinity:

Old girder and T rails for melting	$11.50 to $12.00
Heavy melting steel scrap	11.50 to 12.00
Relaying rails	20.50 to 21.00
Standard hammered iron car axles	23.50 to 24.00
Old steel car axles	17.00 to 17.50
No. 1 railroad wrought	14.00 to 14.50
Wrought iron track scrap	13.00 to 13.50
No. 1 yard wrought, long	13.00 to 13.50
No. 1 yard wrought, short	12.00 to 12.50
Light iron	5.50 to 6.00
Cast borings	6.50 to 7.00
Wrought turnings	6.50 to 7.00
Wrought pipe	10.50 to 11.00
Old car wheels	12.50 to 13.00
No. 1 heavy cast, broken up	12.50 to 13.00
Stove plate	10.00 to 10.50
Locomotive grate bars	9.50 to 10.00
Malleable cast	12.50 to 13.00

Metal Market

NEW YORK, March 1, 1911.

THE WEEK'S PRICES

Cents Per Pound for Early Delivery.

	Copper, New York.			Lead.		Spelter.	
Feb.	Lake.	Electrolytic.	Tin. New York.	New York.	St. Louis.	New York.	St. Louis.
23	12.75	12.37½	43.75	4.42½	4.27½	5.60	5.45
24	12.75	12.37½	43.00	4.40	4.25	5.65	5.50
25	12.75	12.37½	....	4.40	4.25	5.65	5.50
27	12.75	12.37½	42.75	4.40	4.25	5.65	5.50
28	12.75	12.37½	43.00	4.40	4.25	5.75	5.55
March.							
1	12.75	12.37½	42.25	4.40	4.25	5.70	5.55

Tin is 2½c. per lb. cheaper than it was a week ago, although it is still above the cost of import. Copper prices are weak. Spelter shows an advancing tendency. The antimony market is excited over the formation of a syndicate of foreign manufacturers and the price has advanced sharply.

Copper.—Lake copper is being slightly shaded in some quarters, but trading has been good and the market has an encouraging undertone. Electrolytic copper has been fairly firm, and there are reports of sales of about 10,000,000 lb. to various consumers. Many small consumers came into the market during the week and took up lots in quantities of 500,000 lb. or less. There are a few large inquiries out, but some of them are said to have been inspired with a desire to feel the market rather than through any inclination to buy. The leading sellers show no disposition to advance prices, and some of them are known to have made concessions on the usual market quotations, which are 12.75c. for lake and 13.37½c. for electrolytic. Some good round lots of electrolytic have been sold for delivery in the Naugatuck valley, 30 days cash, at 12.45c., which is practically 5 points less than the spot price in New York. The London market closed quiet this afternoon with spot copper selling at £54 13s. 9d., and futures at £55 7s. 6d. The sales amounted to 100 tons of spot and 300 tons of futures. The market closed steady. Exports of copper during February amounted to 18,992 tons.

Pig Tin.—Prophets who regularly forecast the movements of the pig tin market to their own satisfaction admit that they are much at sea over the situation. Although the metal is still selling at above the cost of importation, some small lots which have been in hiding the last two weeks have made their appearance, and the holders show considerable anxiety to sell. While stocks are none too plentiful in this country as yet, many believe that there is relief in sight. The market has been very erratic, but the premiums on spot have gone lower from day to day. A fair business was done yesterday, when it was expected that prices would advance on the strength of higher London quotations. On the contrary, however, the market here went down. The steamer Minnetonka, which was due to arrive last Monday with a cargo of 625 tons, a large part of which had been previously contracted for, did not arrive until yesterday. During the week tin on board the steamer was sold at 25 to 75 points below the price of spot, and the delay in the arrival of the cargo helped to upset calculations. The steamer Mesaba is expected March 8 with 1175 tons, a great deal of which is still unsold, and those who have holdings on the vessel are offering March delivery at 1c. below the price of spot. The February statistics, compiled by C. Mayer, secretary of the New York Metal Exchange, show that deliveries into consumption in the United States during the month were large, amounting to 3800 tons. The world's visible supply of tin February 28 was 4028 tons below that of February 28, 1910. In New York pig tin was sold this afternoon for 42.25c. The London market closed weak to-day, with spot tin selling at £189 and futures at £184. The sales amounted to 40 tons of spot and 140 tons of futures.

Tin Plates.—Tin plates are steady and the demand is gradually increasing. The quotations on 100-lb. coke plates in New York is $3.94. Foreign tin plates are slightly lower, the price at Swansea, Wales, being £14 10s. ½d.

Lead.—Lead has weakened, and the leading interest is practically out of the market, as it continues to hold its quotations at 4.50c., New York, fully 10 points above quotations made by outside dealers. A number of prominent sellers reduced their price from 4.42½c. to 4.40c. last Friday, and others promptly followed suit. The St. Louis market is weak and unsatisfactory. Plenty of lead can be had there at 4.25c. It is known that many consumers are in need of lead, and it will not be long until the usual spring demand from the lead pipe mills will develop. Contractors who use large quantities of lead are also expected to come into the market. Manufacturers of white lead have been buying so cautiously in the expectation of lower prices that there is likely to be a shortage in white lead in the near future. The market to-day is 4.40c., New York, and 4.25c., St. Louis.

Spelter.—Spelter has strengthened, although there is very little trading, both dealers and consumers showing reluctance to enter the market. Holders seem to feel that with a stronger iron and steel market spelter will advance. Early in the week consumers bought more freely than they have in some time, but when they found that quotations were steadily advancing they withdrew. Dealers are quoting 5.70c., New York, and 5.55c., St. Louis. The market shows signs of advancing further.

Antimony.—Excited trading in antimony was witnessed during the week because of reports confirming the formation of a syndicate of foreign producers. It is declared that the Cookson interest have engineered the deal, but as yet there are no indications that the makers of Hallett's have been included in the negotiations, although quotations on that grade have advanced 1c. a pound. Most of the transactions made during the week were between dealers, many of whom, in view of the neglected market, had let their stocks run down. It is generally believed that makers of the Chinese grades are not in the syndicate; in any event, Chinese antimony has become an important factor in the situation. Heretofore most of the Chinese brands were smelted in Europe, but of late the Chinese have added to their smelting capacity at home, and are shipping antimony direct to this country. The grade has been improved, and in line with the general advance in other brands the price is higher. Consumers seem to be well stocked, present trade being confined to the dealers. Cookson's is bringing 9.50c.; Hallett's, 9.25c., and Chinese and Hungarian grades, 9c. It is interesting to note that within the last two weeks Hallett's has advanced 1.50c. in value, while Chinese grades have gone up about 1.75c. Hallett's antimony seems to be more scarce than other brands and holders are reluctant to quote for delivery in April and May.

Old Metals.—The demand has fallen off and the market is dull. Dealers' selling prices are as follows:

	Cents.
Copper, heavy cut and crucible	11.75 to 12.25
Copper, heavy and wire	11.50 to 11.75
Copper, light and bottoms	10.75 to 11.00
Brass, heavy	8.00 to 8.25
Brass, light	6.75 to 7.00
Heavy machine composition	10.50 to 10.75
Clean brass turnings	7.75 to 8.00
Composition turnings	8.75 to 9.00
Lead, heavy	4.20 to 4.25
Lead, tea	3.95 to 4.00
Zinc scrap	4.25 to 4.30

Metals, Chicago, February 28.—Pig tin has suffered a slight reduction this week, while antimony and spelter have

enjoyed small advances. The copper market is unchanged. The only change in old metals is ¼c. advance on copper bottoms. Chicago prices are as follows: Casting copper, 12⅝c.; lake, 12¾c. to 12⅞c., in carloads for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, carloads, 44c.; small lots, 46c.; lead, desilverized, 4.35c. to 4.40c. for 50-ton lots; corroding, 4.60c. to 4.65c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 5.55c. to 5.60c.; Cookson's antimony, 10½c., and other grades, 9½c. to 10c. in small lots; sheet zinc is $7.50, f.o.b. La Salle, in carloads of 600-lb. casks. Old metals are quoted as follows in less than carload lots: Copper wire, crucible shapes, 12½c.; copper bottoms, 10¼c.; copper clips, 12c.; red brass, 10½c.; yellow brass, 9c.; lead pipe, 4⅜c.; zinc, 4¼c.; pewter No. 1, 29c.; tin foil, 34c.; block tin pipe, 37c.

Metals, St. Louis, February 27.—The market for lead is easy, quoted at 4.25c. to 4.27½c.; spelter is stronger, quoted at 5½c., both at East St. Louis. Zinc ore is held at $39 to $41 per ton, Joplin base. Tin is quoted at 44.35c.; antimony (Cookson's), 8.85c.; lake copper, 13.10c.; electrolytic, 12.85c., all at St. Louis. The demand for finished metals the past week was excellent, about 25 per cent. of which was from railroads. The leading manufacturer reports orders aggregating 225 tons in one day.

Notes on Prices

Rope.—The condition of the cordage market continues about as for some time, with possibly a slight improvement in demand. Quotations on Manila rope of the highest grade are referred to as being more nearly adhered to than in the past. The large trade is alluded to as swinging over to the best grade. The following quotations represent prices to the retail trade in the Eastern market for rope 7-16 in. in diameter and larger, with card advances for smaller sizes: Pure Manila of the highest grade, 8¾c. to 9¼c. per pound; second grade Manila, 7¾c. to 8¼c. per pound; hardware grade, 7¼c. to 7¾c. per pound; pure sisal of the highest grade, 6¾c. per pound; second grade, 6¼c. per pound; rove jute rope, ¼-in. and up, No. 1, 6½c. to 7c. per pound; No. 2, 6c. to 6½c. per pound.

White Lead in Oil.—The demand for white lead in oil is for the most part confined to immediate or nearby requirements, business lacking snap. Prices are sustained by the high price of linseed oil. For the best brands, New York quotations are as follows: In lots of 500 lb. and over, 7½c. in 100, 250 and 500 lb. kegs; 7¾c. in 25 and 50 lb. kegs. In lots of less than 500 lb. the usual advance of ½c. is charged.

Linseed Oil.—Foreign markets are a little easier, which is given as one reason for consuming manufacturers deferring purchases. Considerable foreign linseed oil is said to be in New York. The holders are finding it difficult to dispose of it, as large buyers are not as familiar with foreign brands as they are with those of home crushers. For carload lots of raw domestic oil, 95 c. per gal. is quoted. The following quotations represent New York prices in five-barrel lots or more:

	Cents.
State, raw	96
City, raw	96

Oil in lots of less than 5 bbl., 1 cent advance per gallon.
Boiled oil, 1 cent advance per gallon over raw.

Naval Stores.—The local turpentine market has been quiet with light demand, but firm at quoted prices. Cold weather at the producing sections in the South may retard the new crop to some extent. New York turpentine quotations in five-barrel lots are as follows:

	Cents.
In oil barrels	91
In machine barrels	91½

Less than 5-bbl. lots, ½ cent advance per gallon.

The high price of rosins is holding back purchases by consumers, but quotations are maintained owing to the strong position at Southern points. On the basis of 280 lb. to the barrel, common to good strained is quoted at $7.35 and grade D at $7.70 in the New York market.

The Canada Ford Company, Montreal, calls attention to an error made in the reference to it on pages 508-9 of *The Iron Age* of February 23. The name of its works in England is the Brush Electrical Engineering Company, Ltd.

The Railway Steel Spring Company has elected the following directors: H. K. Devereaux, to succeed the late Julius E. French; George B. Motheral, to succeed Philo N. French; Charles Scott, Jr., to succeed George G. McMurtry.

E. E. Williams and H. C. Duncan, both of Huntington, W. Va., have been appointed receivers for the Independent Steel Company, Kenova, W. Va.

Iron and Industrial Stocks

NEW YORK, March 1, 1911.

The stock market had been steady, if not strong, under the rather confident belief that the Interstate Commerce Commission would grant the railroad companies permission to advance their rates for at least a part of the increase proposed. Therefore, when the decisions were announced last Thursday afternoon forbidding any advance, a severe shock was administered to security holders, and a sharp drop occurred on Friday. The decline did not run into a panic and some recovery was made on the day following, since which time prices have been steady. The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., pref.	31 - 32	Railway Spr., com.	34¼- 35
Beth. Steel, com.	30 - 32½	Railway Spr., pref.	97¾-100
Beth. Steel, pref.	59½- 63	Republic, com.	32⅜- 34½
Can, com.	9 - 9⅞	Republic, pref.	98⅜- 99
Can, pref.	79½- 82⅛	Sloss, com.	52 - 53¾
Car & Fdry, com.	52⅜- 56¾	Sloss, pref.	112¾-113
Car & Fdry, pref.	116½	Pipe, com.	18 - 19
Steel Foundries	46 - 50	Pipe, pref.	58 - 61
Colorado Fuel	33 - 33¾	U. S. Steel, com.	76⅜- 81¼
General Electric	152 -154	U. S. Steel, pref.	117⅜-119¼
Gr. N. ore cert.	58½- 62⅜	Westinghouse Elec.	69 - 70½
Int. Harv., com.	116 -118⅜	Va. I., C. & C.	61 - 62
Int. Harv., pref.	122½-123½	Am. Ship, com.	75 - 75⅜
Int. Pump, com.	40 - 43	Chi. Pneu. Tool	52¼- 55½
Int. Pump, pref.	86⅝- 88⅝	Cambria Steel	45 - 48
Locomotive, com.	36¾- 42	Lake Sup. Corp.	29½- 31
Locomotive, pref.	109¾	Pa. Steel, pref.	106½
Nat. En. & St., com.	17⅞- 18	Warwick	11⅛
Pressed St., com.	32¾- 35½	Crucible St., com.	13¾- 14½
Pressed St., pref.	98 - 99½	Crucible St., pref.	79¼- 81½

Dividends.—The American Car & Foundry Company has declared the regular quarterly dividends of ½ and 1 per cent. on the common and 1¾ per cent. on the preferred stock. Both payable April 1.

The Barney & Smith Car Company has declared a dividend of 2 per cent. on the preferred stock, payable March 1. This the first dividend on the stock in over two years.

Stockholders of the Pittsburgh Valve, Foundry & Construction Company have ratified the rearrangement of its capital as proposed by the directors. The capital is $1,750,000, all of one class, on which quarterly dividends of 1¾ per cent. have been paid. This is to be divided into two classes of equal amounts, $575,000 6 per cent. cumulative preferred and $575,000 common. It is provided that the preferred can be retired in any part at any dividend period at 110, on three months' notice.

The Crucible Steel Company of America has declared a quarterly dividend of 1¾ per cent. on its preferred stock, payable March 31.

The Standard Chain Company, Pittsburgh, has declared a dividend of 1 per cent. on the preferred stock, which is the first since January, 1908.

The Executive Committee of the National Metal Trades Association is preparing an elaborate programme for the thirteenth annual convention of the organization which will be held at the Hotel Astor, New York, April 12 and 13. The committee will meet April 11 to make final arrangements. The programme includes a banquet on the evening of the last day of the convention.

Newspaper statements relative to an attempt to wreck the new plant of the Iroquois Iron Company, at South Chicago, on the night of February 24, are without foundation. Two bombs were exploded in the vicinity, but injury was evidently not intended to this company's property, as the explosions took place on a railroad track at a considerable distance.

The Allen Engineering Company has its new plant near completion at Northeast Memphis and is installing downtown offices in the Exchange Building, Memphis, Tenn. A part of the plant is already running 22 hours a day. The company will devote its attention to transmission apparatus, irrigation pumps, lumber and dry goods trucks, special pattern work, &c.

The Alden-Sampson Mfg. Company has removed its entire business from Pittsfield, Mass., to Detroit, Mich. Communications intended for the company should be addressed to Oakland and Massachusetts avenues, Detroit.

The Pottstown Iron Company, Pottstown, Pa., at its recent annual meeting, re-elected the directors with the exception of Stephen Heckscher, who takes the place of his brother, the late Austin Heckscher.

German Steel Shipments Slightly Less.—The report of the German Steel Syndicate shows that the shipments of A products in January, 1911, were 404,479 tons, against 442,661 tons in December and 378,326 tons in January, 1910. The January shipments of semifinished steel were 140,253 tons, against 143,691 tons in December and 133,609 tons in January, 1910; of railroad material, 161,056 tons, against 193,324 tons in December and 134,200 tons in January, 1910; of structural shapes, 103,170 tons, against 105,646 tons in December and 110,427 tons in January, 1910.

The Wheeling Mold & Foundry Company, Wheeling, W. Va., builder of induction drives, rolling mill machinery, chilled, sand and steel rolls, ingot molds and acid open hearth steel castings, is making extensive improvements in its plant. It has about completed a new erecting shop, 60 x 160 ft., parallel to its present shop, with room for a yard crane runway between the two buildings. It is installing another 25-ton acid open hearth furnace in its steel foundry, which will enable it to make steel castings up to 60 tons. These improvements, together with additional machine shop equipment, will give the company a considerable increase in the capacity of its foundry and machine shops.

The International Municipal Congress and Exposition of which Edward H. Allen, 1107-1108 Great Northern Building, Chicago, Ill., is general manager, has issued a pamphlet giving the special features of the congress and exposition, to be held in Chicago September 18 to 30, 1911. It will be held in the Coliseum, Armory and Exposition Grounds. The pamphlet presents a long list of subjects which have been decided upon for discussion and of exhibits which are desired. A diagram is included showing the floor plan, with the location and sizes of space designated.

The Brazilian Government, according to advices from Rio de Janeiro, has granted to native capitalists a 25-year concession for a 150,000-ton steel plant in the State of Minas Gaeras, with a subsidy of $3 a ton on ingots, $8 a ton on rails, plates and structural materials, and $10 a ton on certain other material. The Government is pledged to take 50,000 tons annually, and is restricted from buying foreign made material, unless inspectors prove that the new plant does inferior work. The company will be exempted from duty on coal and coke, and will receive preferential on the Government railroads.

E. J. Deckman, Frick Building, Pittsburgh, Pa., representing the Hoopes Mfg. Company, Springfield, Ohio, has recently made installations as follows: A. M. Byers & Co., for installation in their Pittsburgh plant, a 3000-hp. exhaust steam feed water heater; Robinson Clay Products Company, Parrel, Ohio, an 800-hp. exhaust steam feed water heater; to Pittsburgh manufacturers, one 2-in, one 2½-in., two 4-in. and one 6-in. steam separators and one 3-in., one 7-in., one 8-in., one 14-in., one 18-in. and two 20-in. cast iron exhaust heads.

The Union Switch & Signal Company will hold its annual meeting in the Westinghouse Building, Pittsburgh, March 14, at which time the stockholders, in addition to electing directors, will take action on the authorization of the Board of Directors to set aside up to 2000 shares of the unissued common stock for the benefit of employees of the company (excluding directors and general officers), with a view to encourage them to become stockholders through such concession in price and such terms of payment as may seem expedient and equitable.

The Westinghouse Machine Company, East Pittsburgh, Pa., has recently received an order from the Northern Indiana Gas & Electric Company, Chesterton, Ill., for two 3750 kva. steam turbines, which will be connected to 750-kva., 13,200-volt, 3-phase, 60-cycle Westinghouse generators; also an order from the Bradford Electric Light & Power Company, Bradford, Pa., for a 17 x 26 in., 375-hp., horizontal gas engine, which will operate on natural gas and will be connected to a Westinghouse 250-kva., 2400-volt, 60-cycle, 3-phase generator.

The general offices of the Des Moines Bridge & Iron Works will shortly be moved from Des Moines, Iowa, to the Curry Building, Pittsburgh, but the Des Moines plant will not be abandoned, as stated in the daily press. Plans are being prepared by the company for considerable enlargements at its Neville Island plant, Pittsburgh, but these improvements will not be carried forward at present.

The Southworth Machine Company, manufacturer of specialties for printers, lithographers, bookbinders and kindred trades, Portland, Maine, has just moved into its large new factory, which is stated to be the first reinforced concrete factory in Portland. A note from the company states that in this building "a room is planned in which can be found *The Iron Age* and other helps for various heads of departments."

President James A. Campbell and other officials of the Youngstown Sheet & Tube Company, Youngstown, Ohio, recently visited and inspected the open hearth plant of the Lackawanna Steel Company at Buffalo, N. Y. Their company has had under consideration for some time the building of an open hearth steel plant at Youngstown, but definite plans have not yet been made, nor has an appropriation been set aside for it by the directors.

The New York office of the Richard D. Kimball Company has been moved from 437 Fifth avenue to 15-17 West Thirty-eighth street. The company also maintains an office at 6 Beacon street, Boston, Mass. It makes a specialty of the design of both steam and electric power plants, as well as the inspecting and the supervision of existing installations with a view to securing greater economy in operation.

The Sturtevant Mill Company, through its Pittsburgh office, has recently made sales of pulverizing and crushing machinery as follows: Carnegie Steel Company, a Newaygo separator; Republic Iron & Steel Company, a rotary crusher; National Malleable Castings Company, balanced rolls 36 x 16, weighing 40,000 lb.; Canton Fertilizer & Chemical Company, a ring roll mill and rotary crusher.

The Lackawanna Steel Company is having plans prepared for a hospital building which it will erect at Ellsworth, Pa., adjacent to the mines of the Ellsworth Coal Company, which it controls. The structure will be fireproof, of brick and steel, 90 x 130 ft., two stories and basement, with concrete and tile floors, and will be equipped with all modern hospital conveniences and appliances.

The McGill Mfg. Company, electrical specialties, Valparaiso, Ind., is the new name of the Crescent Company. The main office of this company is at the factory, while it maintains a Chicago office as a sales office for the convenience of the local trade. The ownership of the company remains as before, there being no change either in the personnel or policy. J. H. McGill is president; H. W. Harrold, treasurer, and M. L. Sullivan, secretary.

The New York Shipbuilding Company, Camden, N. J., launched February 25 the steamship Suwanee, the first of two steel passenger and freight ships to be built for the Merchants & Miners' Transportation Company, Baltimore, Md. The Suwanee is 330 ft. long, 46-ft. beam, and will have a carrying capacity of 4200 tons.

W. N. Ritchey, Pittsburgh agent for the Bruce-Macbeth Engine Company, Cleveland, Ohio, has sold a 75-hp. gas engine to the Olympic Theater, Pittsburgh, to operate a 50-kw. generator.

Personal

Among notable passengers due to arrive in New York March 7, on the Kronprinz Wilhelm, is Richard Lindenberg, president of the Lindenberg Steel Works, Remscheid-Hasten, Germany. Mr. Lindenberg's name is well known in the United States, particularly in steel and metallurgical circles. It is due to his farsightedness and energy that the manufacture of steel in the electric furnace progressed from the experimental stage to an everyday business basis, and it may well be said that the development of the Heroult furnace system here also traces back to Mr. Lindenberg's works at Remcheid. During the last five years hundreds of engineers from this country have visited these mills, and have a vivid recollection of the hospitable reception tendered them, as well as the broad minded absence of secrecy and the readiness with which all technical and metallurgical information was given. Mr. Lindenberg has not been in the United States since 1904 and keenly desires to be informed as to the progress made during the intervening years, particularly in the manufacture of steel. In Mr. Lindenberg's company is Prof. F. R. Eichhoff, of the Royal Academy of Mining in Berlin. Prof. Eichhoff was formerly the managing expert of the Heroult-Lindenberg electric furnaces, and the rapid developments of electrometallurgical processes are greatly due to him. He left the Lindenberg Steel Works in response to the offer of a chair at the Berlin Academy as the successor to Dr. Wedding, the well-known instructor of metallurgy of iron. Professor Eichhoff is still working on the further development of electrometallurgical processes and problems for which purpose he had a 300-lb. electric furnace erected in his laboratory at the academy.

J. K. Dimmick, Philadelphia, was elected to succeed his son, Fred D. Dimmick, as president of the Dimmick Pipe Company at a meeting of the directors of the company held in Birmingham, Ala., February 21. Fred D. Dimmick, who has resided at Birmingham, will remove to Philadelphia to take charge of the business of J. K. Dimmick & Co. in that city, and J. K. Dimmick, who has heretofore been at Philadelphia, will remove to Birmingham. James H. Goodapple was elected secretary and treasurer of the company. The directors are James Bowron, Culpepper Exum, Erskine Ramsay, A. J. Goodwin, A. J. Brown, J. K. Dimmick and J. H. Goodapple.

Louis M. Zach has resigned his connection as mechanical engineer and expert with the Wells Brothers Company, Greenfield, Mass., and took up his new duties March 1 with Wickes Brothers, Saginaw, Mich., in a designing and estimating capacity.

G. W. Douglas, formerly a salesman in the pig iron department of Rogers, Brown & Co., is now with J. K. Dimmick & Co., Land Title Building, Philadelphia, Pa., as a salesman in their pig iron department.

Thomas C. Clarke, formerly general superintendent of the Lackawanna Iron & Steel Company, and who for the past three years has had charge of the steel sheet piling department of the Lackawanna Steel Company, has resigned to accept a position with the Lehigh Coke Company, which is about to build a large plant at South Bethlehem, Pa.

Hubert Merriweather, recently mine superintendent of the Juragua Iron Company, at Firmeza, Cuba, has been appointed general superintendent of the company, succeeding E. M. Holmes, deceased.

Andrew Carnegie has accepted an invitation of the trustees of Carnegie Institute of Pittsburgh to be their guest on Founder's Day, April 27.

J. C. Ward of Chicago, director and general manager in the United States for Edgar Allen & Co., Ltd., Sheffield, England, sailed February 22 for England, accompanied by Mrs. Ward. Before returning to Chicago Mr. Ward will visit India, China and Japan in connection with the company's foreign agencies, which are under his direct supervision. He will be absent a year.

Ebenezer Francis, superintendent of the steel foundry of the Pennsylvania Steel Company, Steelton, Pa., has resigned to accept the position of superintendent of the Titan Steel Company, Newark, N. J. He has been connected with the former company for nine years and is particularly well known in connection with the manufacture of manganese steel. B. L. Weaver, who has been assistant superintendent of the frog and switch department of the Pennsylvania Steel Company, succeeds Mr. Francis as superintendent of the steel foundry.

W. C. Fownes, Jr., formerly connected with the Midland Steel Company, has been elected a member of the Board of Directors of the Crucible Steel Company of America, Pittsburgh, succeeding Reuben Miller, recently resigned.

Samuel H. Hart, who has been connected with the Louisville machine shops of the Louisville & Nashville Railroad, has been appointed superintendent of the Seattle Steel Company, Seattle, Wash.

W. E. Dodds, general manager of the Standard Cast Iron Pipe & Foundry Company, Bristol, Pa., has returned from a trip to the Mediterranean.

Charles E. Gates has been made general manager of the Shirley Radiator & Foundry Company, Shirley, Ind. He was for years general manager of the McElwaine-Richards plant at Noblesville, Ind. A. W. Clement has been appointed sales representative. He was formerly engineering salesman of the Ohio Brass Company, Mansfield, Ohio, and later sales manager for the Cleveland Bronze & Brass Works, Cleveland, Ohio. The Union Trust Company of Indianapolis, which is receiver for the plant and has operated it for a number of years, has purchased additional ground and has let the contract for additions to the plant that will double its capacity.

F. B. Nagle, formerly with the Republic Iron & Steel Company, and J. Raymond Young of the general office of the Carnegie Steel Company, Pittsburgh, are now located in Buffalo in the interest of the Carnegie Steel Company's Pittsburgh warehouse.

R. T. McCormick has been appointed manager of sales of the Petroleum Iron Works Company, builder of steel plate construction. This company has discontinued its Pittsburgh office, and will handle Pittsburgh territory business from its general offices at Sharon, Pa. Its branch offices located in various cities will be continued.

William E. Corey sails for Europe Saturday to be absent until the middle of July. On his return he will occupy offices in the Trinity Building, 111 Broadway, New York.

John S. Oursler, manager of the Sharon and New Castle plants of the Carnegie Steel Company, has returned from a trip to Europe.

Phillip E. Wright, sales agent for the Thomas Iron Company in Philadelphia territory, with offices in the Stephen Girard Building, Philadelphia, sailed last week for a short trip to Cuba.

W. H. McFadden, who retired March 1 as vice-president and general manager of Mackintosh, Hemphill & Co., Pittsburgh, was presented with a watch and fob by employees and office associates. Following the presentation Mr. McFadden gave to each of the employees a photograph of himself with his autograph.

D. B. McClelland, vice-president and treasurer of Spang, Chalfant & Co., Inc., Pittsburgh, returned last Saturday from a prolonged visit to the Pacific Coast.

Percival Roberts, Philadelphia, was elected a member of the Finance Committee of the United States Steel Corporation at the meeting of the directors February 28.

Geo. H. Adair, who has been manager for Fairbanks, Morse & Co. of their Seattle branch since it was started five years ago, has severed his connection with that concern, and with his father and others purchased the business of the Kilbourne & Clark Company, Seattle, Wash. The name has been changed to the Geo. B. Adair & Son Company, and among the first lines it selected was that of the Foos Gas Engine Company, Springfield, Ohio. With the large variety of types and sizes of the Foos line, this will be the strongest gas engine agency in that field, and will undoubtedly secure a considerable share of the business.

The Society of Chemical Industry

Treatment and Purification of Boiler Feed Water

A meeting of the New York section of the Society of Chemical Industry was held at the Chemists' Club, 108 West Fifty-fifth street, New York City, February 24. It was devoted to a consideration of papers relating to the treatment and purification of boiler feed water.

The first of these papers, entitled "A New Treatment of Water, Preventing Scale in Boilers Without the Use of Chemicals by the Aid of Aluminum Plates," was read by Thomas R. Duggan, London, England. This paper called attention to the cost of using chemicals for softening water for boiler purposes, and also pointed out the disadvantage of using chemicals in water which was to be used either for dyeing or brewing. The invention of Herr Brandes of a process employing a device known as the aluminator, which led to the softening of old scale and the formation of less new scale, was referred to. With this process the boiler feed water runs down an aluminum plate having a certain slope and various widths and depths of corrugations in its surface according to the character of the water to be treated.

The theory of the operation of the aluminator is that a current of electricity is induced by the passage of the water over this metallic plate and ionization of the salts present in the water takes place. To secure the best results the plate should be placed in a north and south direction and exposed to air. If placed in the opposite direction the water is subjected to electrolytic action, and if air and light are excluded from it it will not operate. The passage of the water over the plate abrades aluminum from the surface of the plate, although the amount lost in this way per 1000 gal. treated is very slight. This abraded aluminum is present in the water when it enters the boiler, either as the metal in a colloidal form or else as aluminum hydroxide, and acts as a nucleus for the salts and causes them to crystallize and drop to the bottom of the boiler instead of forming scale upon it. The principal advantages claimed by Mr. Duggan for the aluminator are the prevention of the formation of hard scale, an entirely automatic action, absence of all chemicals from the process, the metal of the boiler remains unaffected by the salts contained in the water, corrosion and pitting are avoided, fuel economy is secured, free steaming is obtained, no precipitation is required to get rid of the impurities and the whole is accomplished at a lower cost.

In response to questions from different members, the following points were brought out in the discussion: Alkaline waters can be easily treated, as can also acid ones, although those containing ferrous sulphate and other iron salts give trouble. In treating the latter class of water, a chamber filled with marble is placed at the inlet of the plate, but this complicates the process. The changes produced in the water by this treatment are physical and not chemical, the salts having identically the same chemical composition after treatment as before. The physical change that takes place prevents scale formation, although the result of the treatment can be shown only by precipitation after boiling and not by analysis. Aeration plays no part in the change occurring in the salts, and the corrugations are used to increase the surface of the plate as it is practically impossible to get a flat plate of sufficient width to give the same results.

The second paper, entitled "Boiler Water Purification," was presented by William M. Booth, who arbitrarily classified waters according to the quantity of dissolved solids present into soft, hard, saline, alkaline and acid waters. Several methods of purifying boiler waters, ranging from mechanical filtration to the use of boiler compounds and various combinations of thermo-physical, thermo-chemical and the electro-chemical methods, were discussed.

The McKinley Lock Nut Company, whose plant is located on South Eighteenth street, Pittsburgh, has decided to move its works to Washington, Pa.

Obituary

HARRY S. TAYLOR, president of the Michigan Malleable Iron Company, died in Detroit February 23, aged 54 years. He was connected with a number of industrial companies, among them the Monarch Steel Castings Company, Detroit Stoker & Foundry Company, American Motor Casting Company and Chalmers Detroit Motor Company.

DANIEL CONNELLY, president of the D. Connelly Boiler Works Company, Cleveland, Ohio, died February 27, from pneumonia following an operation for an affection of the stomach, aged 57 years. He was born on a farm near Cleveland, and at any early age learned the boilermaker's trade. His first business venture was under the name of the Cleveland Steam Boiler Works, which was succeeded by the present company. He leaves a widow, two daughters and two sons, both of the latter having been associated with him in the business. One son, Lawrence E. Connelly, is vice-president of the company, and the other son, William C. Connelly, is secretary-treasurer.

CHARLES CYRUS KING, chief engineer of the C. W. Hunt Company, died at West New Brighton, N. Y., January 13.

E. M. HOLMES, general superintendent of the Juragua Iron Company, at Firmeza, Cuba, died there February 11, of diabetes. He was previously assistant general superintendent of the Spanish-American Iron Company, at Daiquiri, Cuba. He was an associate member of the American Society of Civil Engineers, member of the American Institute of Mining Engineers, and member of the American Society of Engineering Contractors.

ANDREW MILLIKEN, formerly a prominent manufacturer of Youngstown, Ohio, died February 19, aged 80 years. He was for some years president of the Youngstown Car Mfg. Company. He leaves a widow and three children.

WILLIAM HARRISON CORBETT, Portland, Ore., died February 20. At the time of his death he was president of the Willamette Iron & Steel Works of that city, having taken charge of the establishment some years ago when it was run down very much. Mr. Corbett reorganized the business and made it one of the best in the city. He was born in Brooklyn, N. Y., in 1868. Serving his time as an apprentice machinist in New Haven, Conn., he entered the Stevens Institute of Technology, graduating in 1895 as the class valedictorian. He leaves a widow and two daughters.

Conditions in the Foundry Industry.—Hickman, Williams & Co., The Rookery, Chicago, are making a canvass of the foundry trade "to determine whether the present optimism which seems to be gaining in the foundry business and kindred lines is based on sound conditions, or whether it is sentimental." They have sent out blanks asking information as to pig iron stocks in foundry yards, and the number of days' supply at the present rate of consumption; whether business is good, normal or poor, and also soliciting the foundryman's opinion as to the outlook for 1911. The data obtained in response to these inquiries will be compiled and a condensed report on conditions in the foundry industry will be sent to all those who have furnished information.

The William Tod Company, Youngstown, Ohio, builder of engines and rolling mill equipment, has elected the following officers and directors: John Stambaugh, president; I. H. Reynolds, vice-president and general manager; H. J. Stambaugh, secretary and treasurer; L. A. Woodward, superintendent. Directors: John Stambaugh, I. H. Reynolds, Paul Jones, David Tod and H. H. Stambaugh.

The Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, has elected the following directors: Henry M. Atwood, Joseph T. Speer, C. A. Anderson, S. G. Patterson, John McCaffrey, J. G. Anderson and William Price. Mr. Price, who is president of the Diamond National Bank, is the new director, taking the place of C. R. Rhodes, deceased.

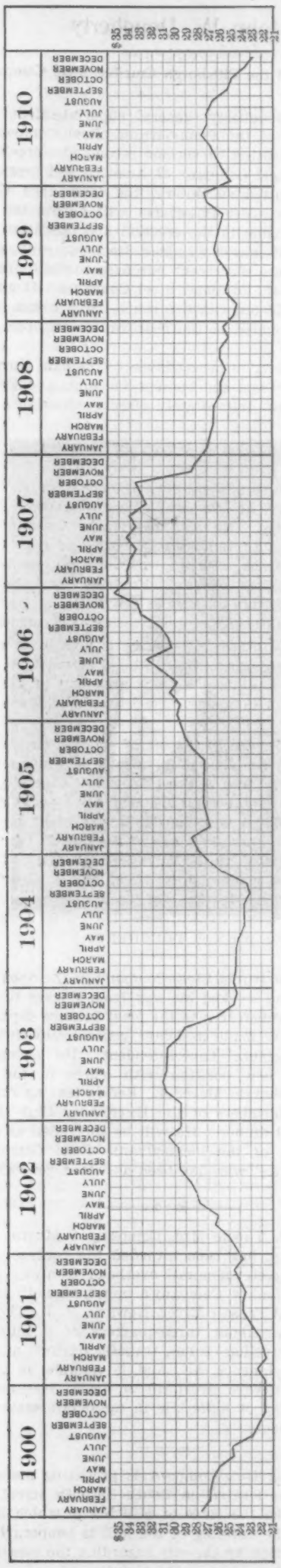


Diagram Showing the Course of Prices of Cast Iron Water Pipe for the Past Eleven Years. The Diagram Is Based on the Price of 6-In. Pipe, Weighing 30 Lb. to the Foot, f.o.b. New York City, in Carload Lots, Per Net Ton of 2000 Lb.

Cast Iron Pipe Prices from 1900 to 1910

The accompanying diagram, furnished by Daniel Runkle of the Warren Foundry & Machine Company, 111 Broadway, New York, shows the course of prices for the past 11 years on 6-in. cast iron water pipe, 30 lb. per foot, f.o.b. New York City, in carload lots, per ton of 2000 lb. For those who desire the tabulation of prices on which this diagram is constructed, the following average monthly prices are presented:

	1900.	1901.	1902.	1903.	1904.
January	$27.50	$21.75	$24.50	$29.25	$24.50
February	26.75	22.25	25.00	29.25	24.25
March	26.75	21.50	26.25	30.75	24.25
April	26.50	22.00	26.00	31.00	24.25
May	26.00	22.25	27.75	30.75	24.00
June	24.50	23.00	28.00	30.75	23.50
July	24.75	23.75	28.50	30.75	23.50
August	23.50	23.75	29.50	29.50	23.50
September	22.25	23.50	29.50	29.00	23.00
October	21.75	24.00	29.50	26.00	23.25
November	21.75	24.50	30.75	24.50	25.00
December	21.75	23.75	29.25	24.25	27.00

	1905.	1906.	1907.	1908.	1909.	1910.
January	$28.00	$29.75	$34.25	$27.00	$24.50	$24.75
February	28.50	29.50	34.25	26.75	24.25	25.50
March	26.75	30,50	34.00	26.25	25.25	26.00
April	27.00	29.75	33.50	26.25	25.00	26.75
May	27.25	31.00	34.25	26.25	25.25	27.50
June	27.25	32.50	33.50	25.75	26.00	27.00
July	27.25	30.25	34.00	25.75	26.25	27.00
August	27.25	30.50	32.50	25.25	26.00	26.50
September	27.25	31.00	33.00	25.75	25.75	25.00
October	28.25	33.00	33.50	25.75	25.50	24.75
November	29.00	33.25	28.50	25.00	27.00	23.50
December	29.25	35.50	28.00	25.50	27.25	22.75

Officers of the American Institute of Mining Engineers

At the annual business meeting of the corporation of the American Institute of Mining Engineers, held at the office of the institute, 29 West Thirty-ninth street, New York, February 21, the following officers were elected: President, Charles Kirchhoff, New York; secretary, Dr. R. W. Raymond, New York; vice-presidents, S. B. Christy, Berkeley, Cal.; W. A. Lathrop, Philadelphia, and Gardner F. Williams, Washington, D. C.; councilors, A. E. Carlton, Cripple Creek, Colo.; W. J. Olcott, Duluth, Minn., and E. L. Young, New York. James Douglas, James F. Kemp and A. R. Ledoux were re-elected as directors. Mr. Kirchhoff becomes president of the institute for the second time, his first term being in 1898 and 1899.

For the one hundredth meeting of the institute, to be held in the Pennsylvania anthracite region, headquarters will be at the Glen Summit Springs Hotel, Glen Summit Springs, Luzerne County, near Wilkes-Barre. The first session will be held Tuesday evening, June 6, 1911. A meeting of the institute will be held at San Francisco in the early part of October, 1911. Following this meeting an excursion to Japan is contemplated, the party not to exceed 100 in number. The plan is to sail from San Francisco October 17 in the Pacific Mail steamship Manchuria, arriving at Yokohama November 3, and witnessing the festivities in Tokio connected with the birthday of the Mikado. The returning steamer leaves Yokohama November 21 and arrives at San Francisco December 7.

Railroad Equipment Orders.—The Nickel Plate Railroad is reported to have placed 25 locomotives with the American Locomotive Company. The Atlantic Coast Line is negotiating for 25 locomotives. The *Railway Age Gazette* notes that the Lackawanna is in the market for 35 locomotives and that the Chicago, Indianapolis & Louisville has ordered 10 from the American Locomotive Company. The Grand Rapids & Indiana is in the market for six locomotives. The Virginian Railroad has ordered 1000 steel hopper cars from the Pressed Steel Car Company, and the Boston & Maine, 88 passenger cars from the Laconia Car Company. The Richmond, Fredericksburg & Potomac is in the market for 100 freight cars, and the Great Northern for 35 passenger and baggage cars. The Escanaba & Lake Superior has ordered 15 flat cars.

Ferrosilicon Imports to the United States

The statistics below have recently become available, showing the imports of ferrosilicon into the United States from the time the Payne-Aldrich tariff went into effect up to September 30, 1910. Under the Dingley tariff, it will be recalled, ferrosilicon bore a duty of $4 a ton, the same as that of pig iron. The new tariff made the duty on ferrosilicon containing not more than 15 per cent. of silicon $5 a ton, and on ferrosilicon containing more than 15 per cent. of silicon 20 per cent. ad valorem. For a portion of the third quarter of 1909, or from July 1 to August 5, the old duty was in effect. In that time the importations of ferrosilicon of all classes were 3717 tons, advance purchases being made in view of the impending increase in duty. The figures given below for that quarter are for the portion between August 5 and September 30:

Imports of Ferrosilicon to the United States.—Gross Tons.

Quarter ending—	15 per cent. silicon or less.	More than 15 per cent. silicon.
September 30, 1909	616	880
December 31, 1909	2,050	1,373
March 31, 1910	400	1,752
June 30, 1910	750	2,273
September 30, 1910	425	2,120
Totals	4,241	8,398

No doubt the importations, as shown by the above figures, particularly of ferrosilicon containing more than 15 per cent. silicon, are less than is commonly supposed in the trade. From the Canadian plant producing this metal the importations for a year or more have been at the rate of 4500 tons of 50 per cent. ferrosilicon a year. It would seem that the imports of European ferrosilicon, represented by the difference between 7518 tons, the total of imported ferrosilicon of high silicon content, in the year ending September 30, 1910, and the 4500 tons from Canada, are considerably less than our consumption of the European product in 12 months. There may have been some further accumulation, in anticipation of the higher tariff, prior to July 1, 1909.

Apollo Galvanized Sheets for Culverts

The American Sheet & Tin Plate Company, Frick Building, Pittsburgh, Pa., has issued an attractive pamphlet entitled "Facts for the Culvert Manufacturer and User." The pamphlet sets forth the special qualifications of Apollo Best Bloom galvanized sheets for use in the manufacture of culverts. The statement is made that since the inception of the metal culvert industry Apollo sheets have been used for this purpose with perfect satisfaction. The company states that the long life of the sheets named "is due to the excellent coating of zinc and not to any special rust resisting properties of the base sheet, which in all instances, irrespective of the name selected for it, is corrodible; if this were not true the use of galvanized sheets would be discontinued in the interest of economy and black sheets substituted." The discussion of the character of stock used in the manufacture of sheets for culvert purposes is exceedingly interesting. The company guarantees these sheets to be equal from the standpoint of actual service and efficiency to any sheets, black or galvanized, now on the market for culvert purposes.

The Berger Mfg. Company, Canton, Ohio, held its annual meeting February 20. The Board of Directors was increased from five to seven members, William Langenbach and A. E. Hockwait being added. The old members re-elected are Ed. A. Langenbach, F. H. Snyder, F. A. Schwertner, R. H. Yancey and C. W. Kreig. Reports showed the past year to have been a very prosperous one. No extensive improvements are contemplated for the coming year.

The Canton Art Metal Company, Canton, Ohio, re-elected the old directors at the annual meeting, February 20. The directors re-elected A. B. Clark, president; W. W. Clark, vice-president and secretary, and E. R. Eckis, treasurer.

John W. Dougherty

President of the Pittsburgh Crucible Steel Company

John W. Dougherty, general superintendent of the Steelton plant of the Pennsylvania Steel Company, has resigned his position to become second vice-president of the Crucible Steel Company of America and president of its newly acquired subsidiary, the Pittsburgh Crucible Steel Company. Mr. Dougherty will devote the major portion of his time to the erection and operation of the plant of the Pittsburgh Crucible Steel Company, at Midland, Pa. Before the recent purchase the Midland plant was owned by the Midland Steel Company. It now consists of one 450-ton blast furnace, coke ovens, &c., to which will be added in the near future an open hearth plant.

Mr. Dougherty is a graduate of Lehigh University, class of 1889, from the courses in mining, engineering and metallurgy. Immediately after graduation he went

JOHN W. DOUGHERTY.

with the Pennsylvania Steel Company in the open hearth department, and worked his way from stocker to melter. He was then transferred to the blast furnace department. In 1899 he was made assistant general superintendent, and in 1902 general superintendent. He assumed the duties of his new position with offices in the Oliver Building, Pittsburgh, March 1. Before leaving for Pittsburgh fellow members of the Harrisburg Club tendered him a farewell dinner. He will be succeeded as general superintendent of the Pennsylvania Steel Company by Frank D. Carney, who has been assistant general superintendent.

The Yale & Towne Mfg. Company, 9 Murray street, New York City, has been awarded the contract for installing a complete monorail overhead tramway system for the J. H. Ladew Company's new mammoth tannery, Plank road and Passaic River, Newark, N. J. The equipment comprises about three-quarters of a mile of I-beam, three traveling cranes, transfer devices, automatic fire door attachments, &c., and is notable as showing the tendency toward overhead or aerial transportation for the handling of materials in up-to-date manufacturing establishments.

The Reading Iron Company is preparing plans for a new mill to be located on South Seventh street, Reading, Pa., to take the place of Mill No. 5, which is to be abandoned. The building of the mill is temporarily held up to await action by the city regarding the construction of a storm water sewer in the vicinity.

The Lackawanna Steel Company

Production and Earnings in 1910

The report of President E. A. S. Clarke of the Lackawanna Steel Company for the year ending December 31, 1910, has just been issued. Referring to the properties of the company it says that the open hearth steel producing capacity was increased about 10 per cent. in the year by the construction of one 60-ton open hearth furnace. The new merchant bar mill, with an estimated annual capacity of 100,000 tons, is nearing completion. The $10,000,000 first consolidated 5 per cent. mortgage gold bonds, convertible into common stock, and the $10,000,000 gold debentures, convertible into 7 per cent preferred stock, which were issued and sold as of March 1, 1910, were listed on the New York stock exchange in the year, together with $34,978,000 common stock. A feature of the financial statement is the charging off of the discount and commission on the above issues of bonds and debentures amounting to $2,800,000, and the New York State tax and other expenses amounting to $119,467.

In the past year $750,000 of Ellsworth Collieries Company purchase money notes were paid and $422,000 of bonds of subsidiary companies were redeemed. The company's working capital, as represented by the surplus of current assets over current liabilities, increased in the year by $3,485,588, making a total of $16,987,406. The sinking and reserve funds increased in the year by $1,090,984 and now amount to $6,814,218.

Concerning the business conditions of the year and the output of the company the report has the following:

"In the report sent you under date of March 9, 1910, it was stated that prices for your company's products for the year 1910 to that date were higher than those of 1909, and that the outlook for business during the year 1910 was favorable. A little later in the year there appeared indications that steel production was in excess of demand and prices began to decline, so that at the close of 1910 they were, in many lines, from $3 to $4 a ton lower than at the beginning of the year. Sales diminished after the middle of the year, and during the last quarter particularly were much reduced. Notwithstanding this, the shipments of the company's products, as shown below, are the largest of any year. The average price of $28.92 per gross ton received by the company for its products in 1910 is $1.25 per ton greater than the corresponding price of 1909, and the year shows a surplus earned over all charges and deductions, including liberal allowances for depreciation, of $2,533,104.71, equivalent to about 7.25 per cent. on the company's outstanding capital stock. Compared with the results of the year 1907, which were the best in the company's previous operations, the shipments show an increase of 90,815 tons, or 9.15 per cent., and the earnings show an increase of $89,258.55, or 3.65 per cent., notwithstanding the fact that the average prices of 1910 were $4.36 per gross ton, or 13.10 per cent. less than those of 1907.

"The company received during 1910 from mines which it owns, or is interested in, and from other sources, 2,127,992 gross tons of iron ore, and produced a total of 854,054 gross tons of coke and 1,008,796 gross tons of pig iron. It also produced 729,638 gross tons of Bessemer ingots and 412,032 gross tons of open hearth ingots, a total of 1,148,670 gross tons of steel ingots of all kinds. Shipments of products were as follows, all in gross tons, the figures for the years 1907, 1908 and 1909 being given for comparison:

	1910.	1909.	1908.	1907.
Standard rails	363,577	278,885	190,763	523,200
Light rails	26,288	33,787	20,253	48,777
Angle bars, fittings, &c.	60,071	43,901	16,719	33,510
Structural shapes	146,641	138,021	72,816	141,455
Plates	87,469	60,953	33,832	113,969
Merchant steel products	67,150	41,607	17,921	61,343
Sheet bars, billets, &c.	159,761	201,455	104,108	61,157
Pig iron and miscellaneous	171,558	115,044	20,438	8,289
Totals	1,082,515	913,653	476,850	991,700

The profit and loss account, the income account and the consolidated balance sheet December 31, 1910, are given herewith:

Profit and Loss Account.

Gross sales and earnings		$31,302,759.95
Less manufacturing and producing costs and operating expenses		24,972,289.48
Total net income from manufacturing and operating		$6,330,470.47
Dividends on investments in companies not controlled:		
Net income from property rented, &c.		940,062.18
Commercial discount and interest		45,996.79
Total income		$7,316,529.44
Deduct:		
Administrative, selling and general expenses, including taxes	$754,713.60	
New York State tax on mortgage securing first consolidated mortgage bonds, Series A, 5 per cent., and other expenses connected with the issue of these bonds and of debentures	119,467.65	
		874,181.25
Net earnings for the year 1910		$6,442,348.19

Income Account.

Total net earnings of all properties after deducting all expenses, including ordinary repairs and maintenance, but not renewal expenditures and other appropriations for the current year, which are deducted below		$6,442,348.19
Deduct:		
Interest on bonds, debentures, gold notes and purchase money obligations—		
Lackawanna Steel Company	$1,729,229.17	
Subsidiary companies	377,815.01	
	$2,107,044.18	
Rentals and royalties	115,296.83	
		2,222,341.01
Balance		$4,220,007.18
Less appropriations:		
For sinking funds on bonds and exhaustion of minerals	$432,378.57	
For depreciation and accruing renewals	1,254,523.90	
		1,686,902.47
Profit for the year		$2,533,104.71
Surplus at January 1, 1910		4,014,599.43
Surplus at December 31, 1910		$6,547,704.14
Less special appropriation for entire discount and commission on first consolidated mortgage bonds and gold debentures issued		2,800,000.00
Net surplus at December 31, 1910		$3,747,704.14

CONSOLIDATED BALANCE SHEET, DECEMBER 31, 1910.

Assets.

Cost of property, real estate, buildings, plant, machinery, &c.:		
As at December 31, 1909	$63,105,915.82	
Additions during 1910	1,050,846.87	
		$64,156,762.69
Investments in ore companies, &c.		6,253,162.91
Cash in hands of trustees account of bond sinking fund		168,082.02
Stock of Lackawanna Steel Company in hands of trustees at par (deducted contra)	$250,000.00	
Current assets:		
Inventories	$12,215,069.13	
Miscellaneous accounts receivable	1,056,670.19	
Customers' accounts (less reserve)	4,199,004.47	
Notes receivable	526,382.09	
Cash in banks and on hand	2,561,878.12	
		20,559,004.00
Deferred charges		91,508.29
Total		$91,228,519.91

Liabilities.

Common stock:		
Issued 349,780 shares of $100 each	$34,978,000.00	
Less amount of stock in hands of trustees	250,000.00	
		$34,728,000.00
Capital stock of Lackawanna Iron & Steel Company not held by Lackawanna Steel Company, 220 shares		22,000.00
Bonded debt.		
Lackawanna Steel Company:		
First mortgage 5 per cent. bonds	$15,000,000.00	
First consolidated mortgage 5 per cent. bonds	10,000,000.00	
		25,000,000.00
Subsidiary companies' bonds		7,345,000.00
Debentures — Five year 5 per cent. convertible gold debentures, due 1915		10,000,000.00
Current liabilities:		
Current accounts payable and payrolls	$2,666,223.53	
Bills payable	236,445.73	
Taxes and interest accrued	668,928.06	
		3,571,597.32
Sinking and reserve funds:		
Depreciation and replacement funds	$4,179,914.61	
Mines extinguishment and bond sinking funds	2,398,592.10	
Contingent and miscellaneous operating funds	235,711.74	
		6,814,218.45
Surplus:		
Balance as at December 31, 1909	$4,014,599.43	
Add profits for year 1910, as per income account	2,533,104.71	
	$6,547,704.14	
Less total discount and commission on first consolidated mortgage bonds and gold debentures issued	2,800,000.00	
		3,747,704.14
Total		$91,228,519.91

The Hilger Revolving Grate Gas Producer

In the issue of *Stahl und Eisen* for January 19, an article by Dr. George Kassel describes the new Hilger gas producer, which was briefly referred to in *The Iron Age* of August 4, 1910, page 280. It differs from the existing types of revolving grate producers in several

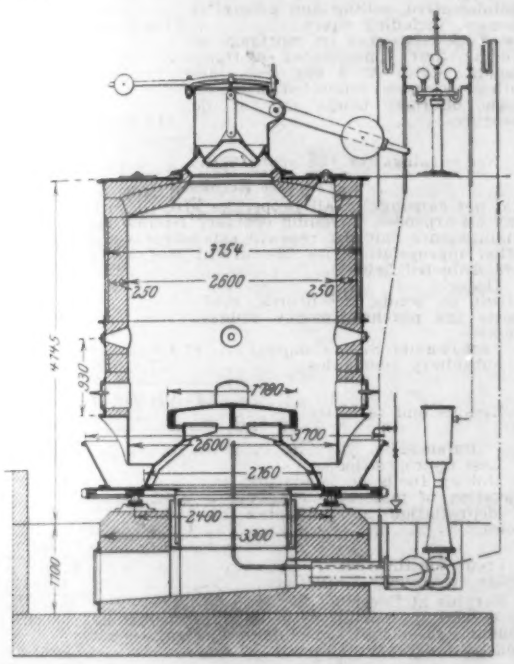


Fig. 1.—The Hilger Gas Producer.—Dimensions in Millimeters.

particulars. The lining is of fire brick throughout, no water cooled casing being used. This has been found to be entirely satisfactory except for certain coals, which carry a high percentage of alkalies. In these cases, a neutral or basic brick lining must be used in the fire zone.

The producer and the grate are shown in Figs. 1 and 2. The grate is seen to consist of an under part and a cap. Both parts form a star, from which the blast of steam and air can be evenly distributed over the whole cross section of the producer. The star shape is most marked in the cap, which fits into the ashes and by its movement affects the whole column of fuel. The grate is of very simple construction and is relatively low, so

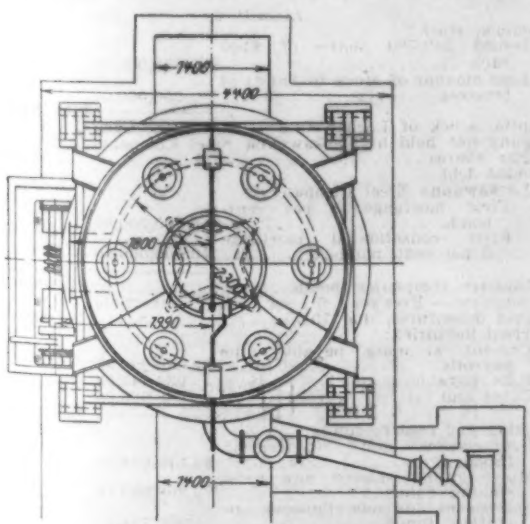


Fig. 2.—The Revolving Grate.

that the producer can be built from 2½ to 3 ft. shorter than revolving grate producers of other types. The drive of the grate and ash pit is another particular feature. The power requirements for one producer vary from ¾ to 1½ hp., according to the size.

The drive, Fig. 3, consists of a forward and backward motion, the effect of both being to give a gradual revolution to the right. It is described in some detail in the paper, and as may be seen in the illustration consists of a worm rack and a worm, which is driven by a ratchet wheel and a double pawl. Movement is given to the pawl by the eccentric rod shown on the right of the illustration. The action of the pawl is varied, according to the ash of the fuel. If too much ash is expelled the drive is so adjusted that the backward and forward motions are equal, and the resultant effect is nothing.

The ashes are removed by another patented device. A freely swinging shovel is hung in the ash pit, so that on the backward movement it swings freely over the ashes. On the forward movement, however, it locks. In this way no resistance is offered to the backward and forward movement.

The gas furnished by the producer is of uniformly high value, as is shown by the following results, which are averages, and not special analyses:

Gas Analyses.

	1.	2.	3.	4.
CO_2....	3.20 to 3.60	3.40 to 4.00	3.00 to 4.00	3.20 to 3.50
O.....	0.15 to 0.44	0.20 to 0.40	0.00 to 0.50	0.10 to 20.20
CO....	29.50 to 31.84	25.20 to 27.10	28.40 to 31.30	27.30 to 28.30
H.....	7.60 to 9.00	7.90 to 9.80	10.70 to 12.70	9.50 to 10.40
CH_4...	2.31 to 3.32	3.20 to 3.80	2.10 to 3.30	52.50 to 52.80
N.....	53.57 to 56.77	57.10 to 58.60	50.10 to 52.00	54.10 to 56.70

No. 1 in the above table shows the results of four analyses of gas from an Upper Silesian coal with up to

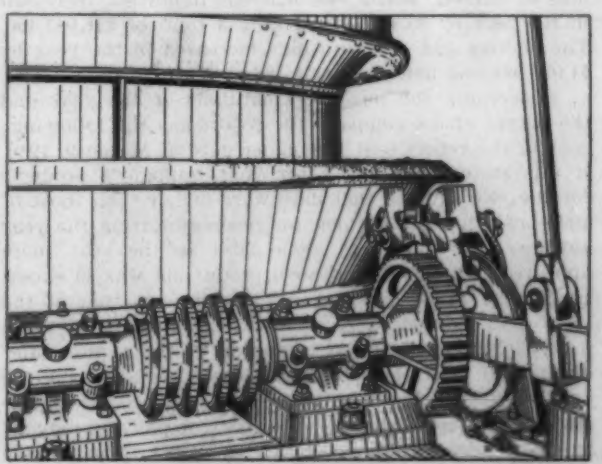


Fig. 3.—The Drive of the Grate.

50 per cent. of dust. No. 2 shows the results of six analyses of gas from average French coal, the charge being 50 per cent. lump and 50 per cent dust. No. 3 gives the results of eight analyses of gas from brown coal briquettes. The gas also showed from 0.10 to 0.40 per cent. of hydrocarbons, in addition to the methane. No. 4 shows the results of eight analyses of gas from a 3 to 1 mixture of a good Westphalian coal and brown coal briquettes. This producer may be obtained in three sizes, and is built by the firm of Poetter, Duesseldorf.

G. B. W.

"Building Up" Impurities in Steel.—In the article by A. H. Jameson on "'Building Up' Impurities in Steel," page 480 in *The Iron Age* of February 23, the omission of one quantity in the computation for the percentage of phosphorus in the steel from the second blow calls for the printing of the figures below in their correct form:

$$0.60 \times 0.06 = 0.036;$$
$$0.40 \times 0.07058824 = 0.028235296;$$
$$0.036 + 0.028235296 = 0.064235296,$$

and this divided by 0.85 = 0.0755709, the percentage of phosphorus in the steel from the second blow.

The Superior Iron Works Company, Superior, Wis., is completing a two-story addition to its plant, 42 x 120 ft., in which it is installing a complete equipment of tools for boiler and structural steel work.

The General Electric Turbine-Driven Compressor*

The First Installation of This Type of Blast Furnace Blowing Engine at the Oxford, N. J., Plant of the Empire Steel & Iron Company

BY RICHARD H. RICE, LYNN, MASS.†

[Great interest has been shown by blast furnace owners and engineers in this new American type of blowing engine; the operation of this installation at the Oxford Furnace has been watched keenly, and the details are now available for the first time. The General Electric Company is building at Lynn three units for the Iroquois Iron Company, Chicago, which follow in general principles the installation which is the subject of Mr. Rice's paper, but differ in many details of design. A three-stage compressor is employed and a five-stage turbine. The capacity is much larger, each compressor delivering 40,000 cu. ft. to the furnace, while the turbine is rated at 5000 hp. More intimate details are not yet available.—EDITOR.]

The General Electric Company recently put in operation at the Oxford, N. J., furnace plant of the Empire Iron & Steel Company, a turbine-driven air compressor for blowing the blast furnace, which is the first installation of this type of apparatus in this country. Fig. 1 is a view of installation, and Fig. 2 gives details of its placing, piping, &c. The unit consists of a six-stage compressor, operating at a normal speed of 1650 rev. per minute, and a directly connected four-stage Curtis steam turbine. The design is such that this normal speed produces a blast pressure of 15 lb. per sq. in. The unit, however, is designed to regulate the volume of air delivered per minute, so as to keep the rate of discharge constant at any value, within its capacity, determined by the furnace superintendent. The regulation is by speed variation, so that the machine is a constant volume, variable speed apparatus, and not a constant speed one as in other classes of blowing units.

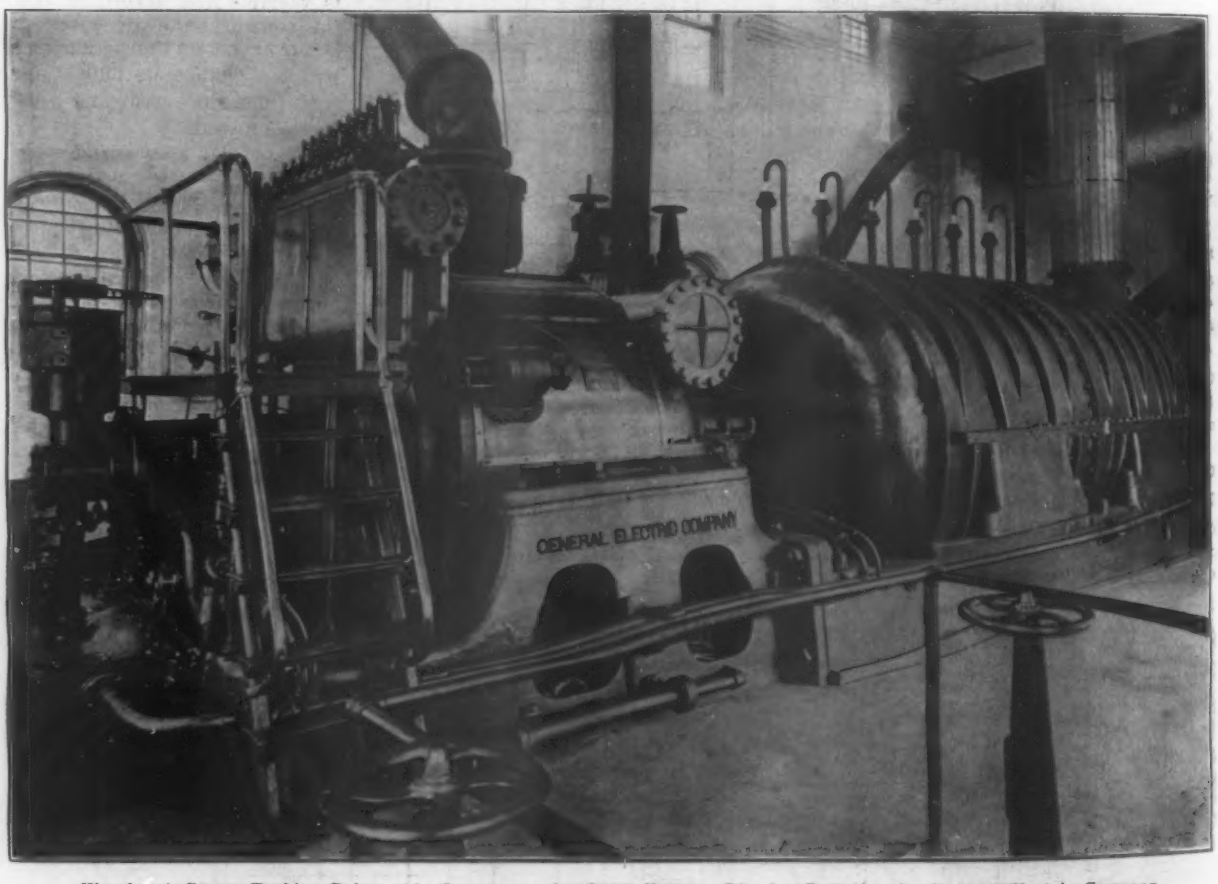


Fig. 1.—A Steam Turbine Driven Air Compressor for Blast Furnace Blowing Built by the General Electric Company.

The six stages of the compressor are arranged in series, the air entering at the end nearest the turbine, and passing from the other end, where it enters the discharge pipe. The impeller wheels have no unbalanced end thrust, so that the ordinary means used in the turbine for locating the rotating elements and preserving proper clearances are sufficient for the entire apparatus. The air is cooled during compression in each stage, and also in passing between stages by water chambers in the diaphragms, and this cooling maintains the compression approximately along the adiabatic line. No valves or rubbing surfaces are used in the compressor, and, as in the turbine, the rotating elements revolve freely with ample clearance, eliminating wear and deterioration; therefore, the efficiency of compression must remain constant.

Fortunately, both turbine and compressor attain their best efficiency at the same speed; therefore, the combination is a logical and efficient one. Further, under conditions usually met with in blast furnace operation involving pressures of blast of 10 to 20 lb. per sq. in.,

* From a paper prepared for the American Society of Mechanical Engineers.

† Consulting engineer and head of the turbine shops of the General Electric Company's Lynn, Mass., works.

the efficiency remains sensibly the same. A curve of efficiency at varying volumes is given in Fig. 4 and above this has been drawn a curve of speeds and pressures which, taken in connection with the first named, shows the variations of efficiency with pressure at rated volume. This latter curve shows graphically the variation of pressure with change of speed, which is as the square of the speed; hence only moderate changes in speed are necessary to give considerable changes in pressure. These are utilized to maintain a constant rate of flow of air into the furnace, against the varying resistances that occur with clogging of tuyeres and changes in the size and composition of the charge, temperatures, &c.

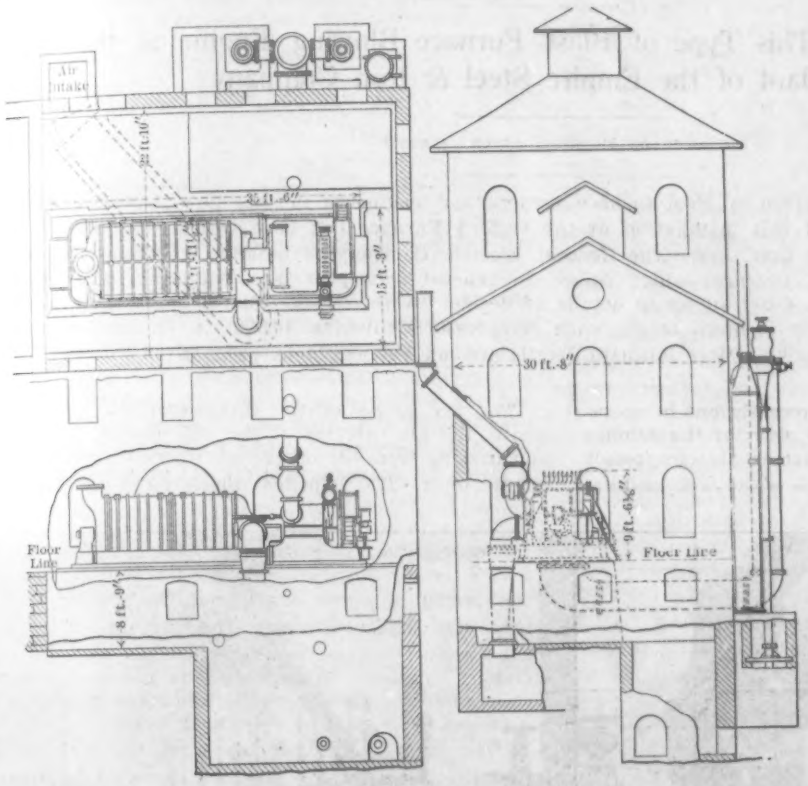


Fig. 2.—Plan and Elevations of the Installation at the Oxford, N. J., Plant of the Empire Steel & Iron Company.

The Constant Volume Governor

The means for regulating speed to maintain constant delivery of air are shown in Fig. 3. A steel disk, *d*, is sustained on the inflowing air current within a conical enlargement, *c*, of the inlet pipe. By a sliding weight, *a*, the resistance of this float and displacement by the air current is adjusted in accordance with a scale on the scale beam *b*, which reads, in cubic feet per minute, volumes of free air. Setting this weight to correspond to the air delivery desired, causes the disk to assume a position which regulates the steam supply to the turbine to give the proper speed and blast pressure for that delivery. If the rate of air flow tends to decrease, the disk sinks to a lower point in the enlargement; since the supporting air current decreases its sustaining power, more steam is admitted to the turbine and the speed is increased, resulting in increase of pressure, and this increased pressure re-establishes the desired flow of air. If too much air tends to flow into the furnace, the reverse takes place. In practice, the operation of this device is very regular and satisfactory. This method of governing by the indications of a properly calibrated scale beam gives an entirely new instrument, which, in the hands of a skilled furnace manager, will undoubtedly enable improved results in furnace operation to be obtained, since an accurate knowledge of the amount of air supply is always at hand. Such accurate knowledge of the amount of air supply cannot be obtained from reciprocating blowing engines; since the expansion of air in clearance spaces causes an error increasing in amount as discharge pressure increases; also since any leakage increases with increase of discharge pressure; also because the slip is variable and uncertain. On the contrary, the air governor is unvarying in its action and will not change its indications with time, since wear and leakage are absent.

In normal blast furnace operation pressures may vary from 10 to 20 lb. per square inch. These pressures require speeds in the particular apparatus under description of about 1500 for 10 lb. pressure to 1800 rev. per min. for 20 lb., as appears on the curve, Fig. 4. The blast furnace operator therefore instructs the engineer operating the compressor not to maintain a certain number of revolutions, as is customary with reciprocating engines, but to set the scale beam weight for the required volume in cubic feet per minute. The calibration of the scale beam is determined during the shop test of the apparatus before shipment by accurate tests with standard orifices and Pitot tubes, and these graduations are accurate within about 2 per cent. A simple oil dashpot attached to the scale beam prevents any racing or undue fluctuations of speed.

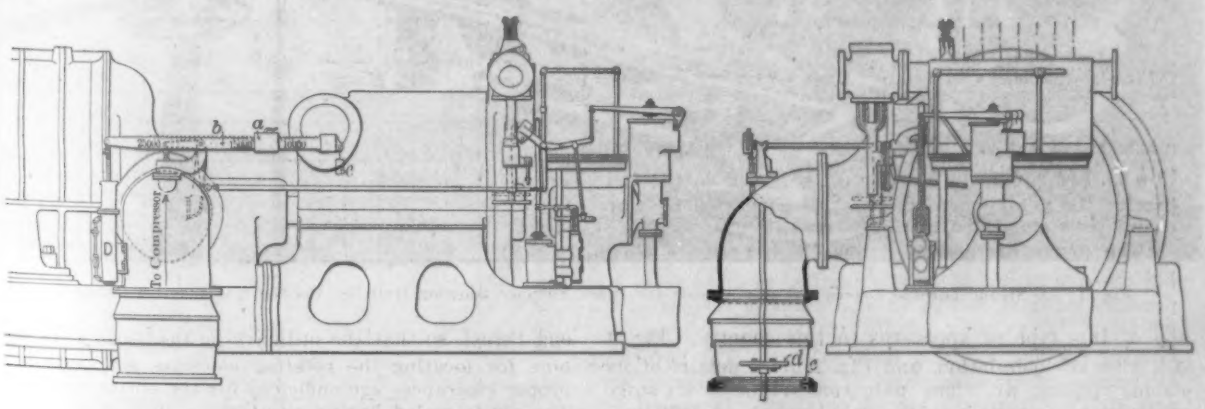


Fig. 3.—Details of the Constant Volume Governor for the Turbo-Compressor.

A hand throttle valve in the main steam pipe is used to stop the compressor. At all other times, control is effected through the scale beam, with the throttle wide open. At times of checking the furnace, or casting, the weight *a* is moved to the extreme end of the scale beam, and still further decrease of speed and pressure is produced by adding an auxiliary weight at this end of the beam or by depressing it by hand. This manipulation is very simple in practice.

The air governor acts upon the pilot valve of the hy-

draulic valve gear commonly used on the larger Curtis turbines, through a system of floating levers, so that when the turbo-compressor nears the maximum speed for which it is designed, 1950 rev. per min., a centrifugal governor of the usual type comes into action and keeps the speed at this maximum as long as the resistance to air flow in the furnace or tuyeres exceeds that for which the air governor is set, 25 lb. per square inch. The air governor again comes into action immediately the furnace resistance decreases. Breaking or sticking of the governor mechanism, permitting the speed to exceed 1950 rev. per min., brings into action an entirely independent emergency governor and closes the main throttle valve.

Oil Supply

In all high speed apparatus certainty of oil supply is important, and particularly so in this service. In this unit three shaft bearings require automatic lubrication, which is furnished by a valveless gear pump, worm driven from the main shaft, which circulates oil under 15 to 25 lb. pressure. The same pump supplies oil to the hydraulic cylinder, which actuates the valve gear. The oil is returned from bearings and cylinder to a tank, where it is settled and strained before being used again. To guard against arrest of oil circulation an

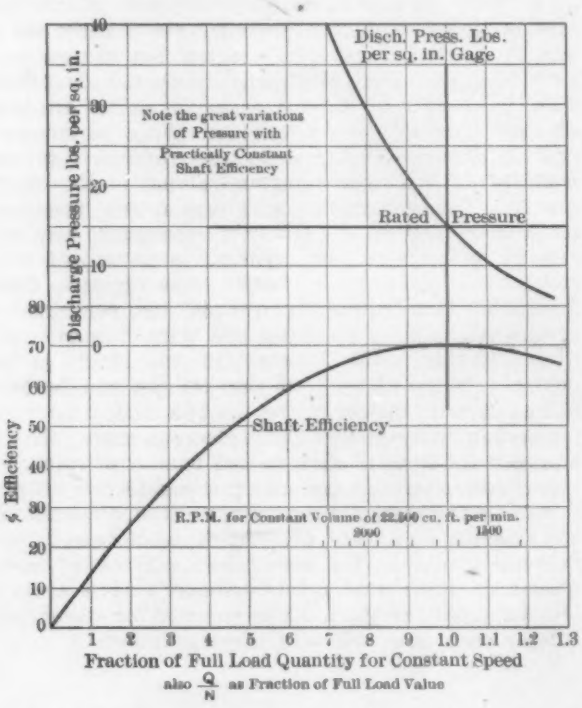

Disch. Press. Lbs. per sq. in. Gage
Discharge Pressure lbs. per sq. in.
Note the great variations of Pressure with Practically Constant Shaft Efficiency
Rated Pressure
Shaft Efficiency
% Efficiency
R.P.M. for Constant Volume of 22,500 cu. ft. per min.
2000
1500
Fraction of Full Load Quantity for Constant Speed
also Q/N as Fraction of Full Load Value

Fig. 4.—Efficiency and Pressure Curves with the Constant Volume Governor.

alarm blows a steam whistle when the oil pressure falls to 5 lb. per square inch. The oil is cooled in the bearings at the point where the heat is generated by water cooled coils embedded in the bearing linings.

The apparatus described uses high pressure steam, but the compressor is equally adapted to drive from low pressure turbines, and so affords means of increasing the efficiency of existing plants containing reciprocating blowing engines, by using their exhaust. The governing by volume of air discharged is equally applicable here and all its advantages can be obtained. Increased efficiency of the plant to the extent of 20 to 50 per cent. may be thus realized with a moderate addition to the cost of the plant.

This installation was put in operation March 8, 1910, and has been in continuous operation since. The machine was designed for a normal volume of 22,500 cu. ft. per minute, but it developed that only about 15,000 cu. ft. of air per minute is required by the furnace, and the pressure corresponding, under furnace conditions, ranged from 10 to 12 lb. Consequently pulsations occurred in the pressure line, the pressure fluctuating about 2 lb., and to overcome this pulsation it was necessary to throttle the inlet opening. Fig. 5 shows the character and magnitude of these pulsations. Meantime a convenient butterfly valve throttling mechanism has been applied, which eliminates these pulsations without appreciable loss of efficiency.

Characteristics of the Turbo-Compressor

Pulsations in pressure are an inherent characteristic of all centrifugal blowing apparatus of similar construc-

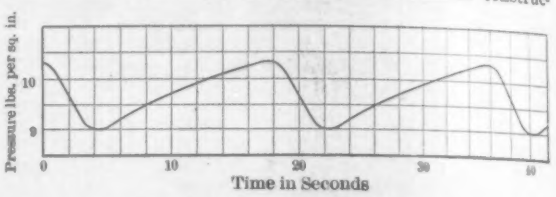


Fig. 5.—Pressure Curve During Pulsations.

tion and occur when the apparatus is operated at loads and pressures differing widely from those for which the apparatus is designed. At any given volume they occur at a certain critical pressure and at all higher pressures, but not at lower pressures. The critical pressure increases also as the volume increases and is slightly affected by the density of the air and the humidity. Fig. 6 gives the characteristic critical pressure-volume curve of this compressor.

The rate and extent of the pulsations are affected by the capacity of the discharge piping, stoves, &c., into which the air flows. The larger the capacity the longer the period or wave length and the greater the wave magnitude, and vice versa. The diagram in Fig. 5 shows the pressure waves from the machine installed at the Oxford Furnace. When tested in the shop, with very short piping of small capacity, the wave length was only a second or so, and of very small hight.

The pulsations occur only when the loads are such that the characteristic pressure curve of the apparatus is rising with increase of volume or remains horizontal, and the effect of the throttling is to superpose a drooping pressure curve, falling with increasing volume, which alters the shape of the resultant pressure curve and makes it droop also. As the throttling required to entirely remove such pulsations is only a few inches of water, it has no appreciable effect on the efficiency of compression. Fig. 7 is the curve of pressure and volumes for this compressor at constant speed.

When this was written the blast pressure at the Oxford furnace varied from 10 to 14 lb. during the day

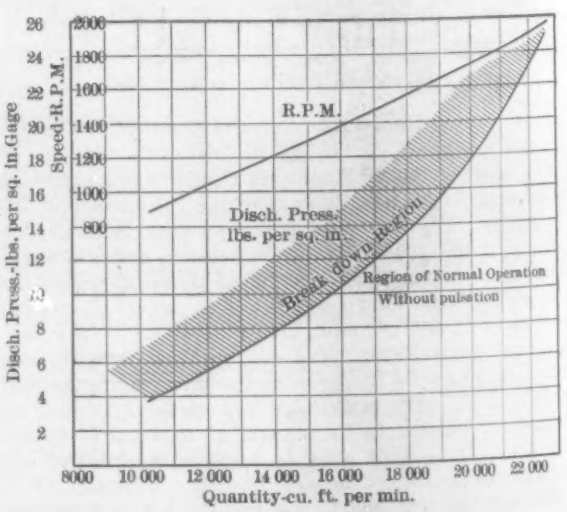


Fig. 6.—Critical Pressure-Volume Curve for the Turbo-Compressor.

with the volume constant at 16,000 cu. ft. per minute. The speed varied from 1500 to 1600 rev. per min. The steam pressure averaged 135 lb.

The figures in the following table are from a typical station log, showing the variation of pressure and volume during a 24-hr. period of operation:

Engine Room Report, Empire Steel & Iron Company, Oxford Furnace, N. J., March 17, 1910.

Time.	Volume Cubic feet.	Blast pressure. Pounds.	Revolutions per minute.	Steam pressure.	Vacuum.
1 a.m.	15,750	13	1,540	140	24
2 a.m.	15,750	12.5	1,490	135	25
3 a.m.	15,750	13.5	1,580	135	25
4 a.m.	15,750	12	1,510	140	24
5 a.m.	15,750	13.5	1,530	155	24
6 a.m.	15,750	13	1,550	150	25
7 a.m.	15,750	12.5	1,550	150	25
8 a.m.	15,750	12	1,490	120	HP.
9 a.m.	15,750	11.5	1,500	130	HP.
10 a.m.	15,750	13.5	1,580	160	26
11 a.m.	15,750	12.5	1,520	155	26
12 m.	15,750	12.5	1,500	150	26
1 p.m.	15,750	13	1,530	140	26
2 p.m.	15,750	12	1,490	150	26
3 p.m.	15,750	13	1,560	130	26
4 p.m.	15,750	13	1,560	150	26
5 p.m.	15,750	11	1,445	145	26
6 p.m.	15,750	11.5	1,450	130	26
7 p.m.	15,750	11	1,490	135	26
8 p.m.	15,750	13	1,510	140	26
9 p.m.	15,750	12.25	1,500	155	25.5
10 p.m.	15,750	11	1,383	140	25
11 p.m.	15,750	11.5	1,410	150	25.5
12 p.m.	15,750	11.5	1,440	145	25

In this 24 hours 208 tons of iron was made.

Comparison with Reciprocating Blowers

The apparatus previously used for blowing the furnace consisted of two vertical reciprocating blowing engines built by the I. P. Morris Company, each having 54-in. steam cylinders, 72-in. blowing cylinders and 72-in. stroke. For each engine the blowing cylinder displacement was 339 cu. ft. per revolution, and the maximum speed rating 30 rev. per min., giving 20,300 cu. ft. per minute total displacement. The actual maximum speed was 23 rev. per min., giving 15,000 cu. ft. per minute total displacement. The average blast pressure was 8 lb. Judging from the speed the volume used was about 14,500 cu. ft. The centrifugal compressor produced an immediate increase in the amount of iron melted by the furnace. The output went up from an average of 139 tons per 24 hours in February, 1910, to 176 tons in April, 1910, and the iron was found to be more uniform and the operation of the furnace was improved. A gradual increase in the amount of air has since taken place and the corresponding increase in pressure required to force the air through the furnace has been necessary as was to be expected. This increase of air has resulted in an increase in the production of the furnace from 176 tons on starting to the present average of about 190 tons. The machine is now operating with 16,000 cu. ft. of air, and the production of ore is 185 tons per 24-hour average. It is proposed to continue this increase to 200 tons per 24 hours, the limit of the charging apparatus. The dimensions of the furnace are: Diameter at bosh, 17 ft. 6 in.; at hearth, 11 ft.; at top throat, 12 ft.; hight from hearth to dumping ring, 80 ft.

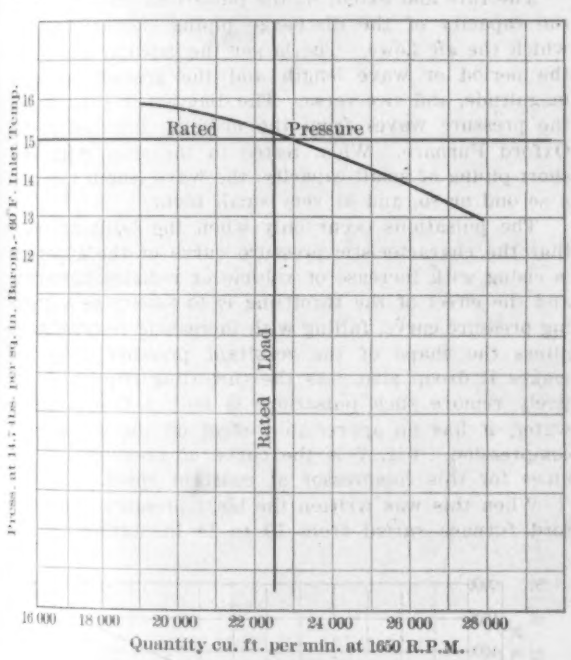


Fig. 7.—Pressure-Volume Curve at Constant Speed.

The condensing apparatus is of the barometric type, and the injection water is supplied by a turbo-driven centrifugal pump placed in the sub-basement. Initially, difficulty was had with the condensing water supply, which made it necessary to operate the machine for a considerable time noncondensing. Owing to unfamiliarity of the fireroom force with the new boilers which had been installed it was even necessary to operate with steam pressures as low as 60 lb. per square inch for various periods under which conditions the compressor operated with entire satisfaction.

Since the condensing apparatus is barometric, the machine operating far below its designed capacity and making an accurate boiler test to determine the amount of feed water difficult under present conditions, no tests have been made to determine the actual efficiency of the machine. It is, however, furnishing considerably more air than the old machines as evidenced by the greatly increased product of the furnace, and at the same time is operating with less boilers, and these boilers are more easily worked than when operating with the engines.

It is difficult to compare the performance of this type of blowing unit with reciprocating types either steam or gas driven, owing to absence of actual test figures; none have been published which permit of accurate and satisfactory comparison. From the results which have been obtained from all sources as to the actual performance of such machines and from actual experience with this machine and the sister machine installed at the Northern Iron Company in line with tests which have been made in the factory, the following conclusions seem correct in reference to this apparatus as compared with reciprocating engines for blowing blast furnaces: That the output of the furnace is increased on account of the greater steadiness of operation and more uniform conditions obtaining in the furnace; that the quality of the product is improved; that the steam consumption is equal to, or less than, that of the best compound engines blowing similar furnaces; that the engine room space occupied is only a fraction of that needed by reciprocating engines, either steam or gas, and that considering all factors, including consumption of fuel; cost of operation, oil and supplies, attendance, &c.; cost of buildings and foundations, interest on the investment; and cost of maintenance of plant, that the centrifugal compressor is a blowing apparatus which can be operated for a lower net cost than any other means of blowing furnaces.

The Optenberg Iron Works, Sheboygan, Wis., has completed and now has in operation an addition to accommodate its steam piping and fitting department. It has installed a 10-in. Cox pipe cutting and threading machine. The company states that it has experienced the most prosperous year in its history in Sheboygan. It recently equipped its plant with machinery for fabricating architectural and structural material for building purposes, besides doing an extensive business in constructing new boilers and tank work of all types, together with equipping complete steam power plants. The company also deals in second-hand boilers and engines, of which it carries a large stock.

The Mount Hood Railway & Power Company, Portland, Ore., has under construction a large auxiliary steam power plant of reinforced concrete and structural steel, resting on piling, work upon which is being rushed with the expectation of having it ready for operation by April 16. The plant is capable of developing 4000 hp., and is being constructed at a cost of $125,000. The installation of the machinery is progressing simultaneously with the construction of the building, and until completion of the main hydroelectric plant, which the company is constructing, this station will be operated continuously.

Machine Molded Piano Plates

One of the Latest Foundry Achievements—The Casting In of Soft Steel Pins for Strings

By the use of a stripping plate molding machine in the manufacture of piano plates great economies have been effected by the W. W. Kimball Company, Chicago. Not only has the cost of molding been reduced practically two-thirds by the installation of this labor-saving device, but the drilling of the plates and the fitting of the string supporting pins have been eliminated. An improved product is another important benefit derived from the application of new methods to this practice, which has not kept pace with the advancement of other branches of the foundry industry in the last decade. That piano plates, owing to their size and skeleton-like frame could not be successfully machine molded was one of the traditions, which until recently retarded progress in this art. Foundrymen specializing in piano work were of the opinion that the castings were too thin and of too great area of the process of molding, which will be referred to later.

Casting In the Steel Pins

One of the plates, with the steel pins cast in, is shown in Fig. 6. It will be noted that the casting is cored out to reduce its weight and is well ribbed to prevent warping. The plate is approximately 48 x 60 in., varies from 5-16 to ⅜ in. in thickness and weighs 132 lb. For supporting the strings 135 pins are required, and it is still the customary practice on hand molded plates to drill holes into the castings into which the pins are driven. Unless the holes are accurately drilled the pins will not withstand the tension of the strings, and the proper spacing of these pins is also essential to correct stringing. The pins are made of soft steel, ⅝ in. long,

Fig. 1.—A Floor of 60 Piano Plate Molds; the Stripping Plate Molding Machine on Which the Drags Are Made Is Shown in the Foreground at the Left and the Cope Stand at the Right.

to permit of molding the patterns on molding machines, and in addition, it was claimed that the skill of experienced molders was required to insure straight, flat castings.

Less than a year ago the Kimball Company decided to erect a foundry for the manufacture of these plates for use in its factory, which has an annual output of 18,000 pianos. The erection and equipment of the plant were placed in charge of Albert A. Huseby, an engineer connected with the company, who was without previous foundry experience. After a careful investigation of the established hand molding methods, he concluded that the application of molding machines to this class of work was not impossible, and, furthermore, he believed it entirely feasible to cast the pins into the plates, thus obviating subsequent drilling and fitting. For adapting a molding machine to this work he sought the aid of Henry E. Pridmore, molding machine manufacturer, Chicago. It was decided to mount the pattern on a stripping plate machine, as shown in Fig. 1, and after a number of molds were successfully made in this way, at a cost much less than by hand molding. Mr. Huseby developed a process for casting the pins into the plates and the equipment for accomplishing this was applied to the molding machine. Figs. 2 to 5 give various views and are hammered over to prevent the strings from slipping off. By casting the pins in the plate all of the previous difficulties have been overcome, and in addition they are more firmly secured than when held by a driving fit.

In Figs. 2 and 3 the stripping plate machine on which the drag half of the mold is made is shown, the former illustrating the pattern in molding position, while the latter is a view of the pattern dropped away from the mold. The machine is one of the standard types built by Henry E. Pridmore, which has been equipped with the Huseby device for supporting the pins during the mold forming operation. Before ramming the mold the pins are set into openings drilled into the pattern, Fig. 2. The pins are supported and held in position in the pattern by stools or spindles, clearly shown in Fig. 3. The stools are 5-16 in. below the face of the pattern, and the pins extend this distance beyond the face of the mold, as in Fig. 4. After inserting the pins in the pattern, the drag flask is set in position on the machine, filled with sand and rammed. The sand is tamped firmly about the pins, as well as other parts of the pattern, and when stripping the pattern away from the mold the stools or spindles support the pins, which are embedded in the sand at their opposite ends. When the mold is

Fig. 2.—The Stripping Plate Machine on Which the Drag Is Molded; the Pins Are Shown Inserted in the Pattern.

lifted off the machine, Fig. 4, the pins are carried in the sand and project into the mold half their length, or 5-16 in. The cope half of the mold is rammed on a stand shown at the right in Fig. 1. After ramming, the mold is merely lifted off this stand, this operation being similar to that usually practiced when molding the drag halves of molds on stripping plate machines.

The pins are neither previously prepared nor coated, but are used in the polished condition in which they are received. No difficulty has been found from crystallization, as might have been expected when casting molten metal against so small a surface, and the pins are more firmly embedded in the iron than when driven into the drilled openings in the plate. To obviate the burning or crystallization of the pins, the gates have been so arranged that the ribs carrying the pins do not receive the first flow of hot metal, and the iron is poured at a slightly lower temperature than is customary for thin work. Six gates are provided, as shown in Fig. 2, and the mold is poured simultaneously from six ladles.

Increased Output with Molding Machines

When these plates are made by hand, the daily output of a molder and helper averages from six to seven molds. By the use of the stripping plate machine and the cope stand five unskilled men produce 65 molds a day. A floor of 60 molds shortly before pouring off is shown in Fig. 1. To equal the record of machine molding would require 18 men—nine molders and nine helpers—when molding by hand. In addition to performing all of the necessary molding operations the five men set the pins, which is not required of the floor molders. To expedite the machine work special cast iron flasks have been provided, which carry the minimum amount of sand necessary for making the molds. The flasks are lifted off the stripping plate machine and are rolled over by an air hoist, which is also used for closing the molds. As the foundry has a cement floor, a 1-in. bed of sand is prepared for each mold. A frame, slightly larger than the flask, is used for making the bed, and the surplus sand is removed with a rake. The duties of each of the crew of five men are clearly defined, and the work is specialized as much as possible. Two of the operators are assigned to the drag machine and two to the cope stand, while the fifth man of the gang makes the bed, sets cores and closes and clamps the molds. In making these molds a large quantity of sand is handled daily by the molding machine crew. One of the heaps in the morning, before the commencement of molding operations, is shown at the left, Fig. 5.

Fig. 4.—Drag Half of the Mold, Showing the Pins in the Sand.

Fig. 3.—The Pattern Lowered, Showing the Pin-Supporting Stools or Spindles.

A stripping plate molding machine and cope stand for molding larger plates, 50 x 60 in., and weighing 183 lb., are now being built by Henry E. Pridmore. The machine will be similarly equipped for casting the pins in the plate, but in addition to the 135 hitch pins in the smaller casting 45 bridge pins must be inserted.

Melting and Finishing Departments

The foundry built by the W. W. Kimball Company for the exclusive manufacture of piano plates is 80 x 220 ft., and in addition to the molding floor contains a cleaning room equipped with a sand blast and a finishing department in which the plates are japanned and varnished. The iron is melted in a 55-in. cupola lined to 37 in., installed by the Whiting Foundry Equipment Company, Harvey, Ill., and the blast is furnished by a blower built by the P. H. & F. M. Roots Company, Connersville, Ind. The blast is delivered into two branch pipes, the one con-

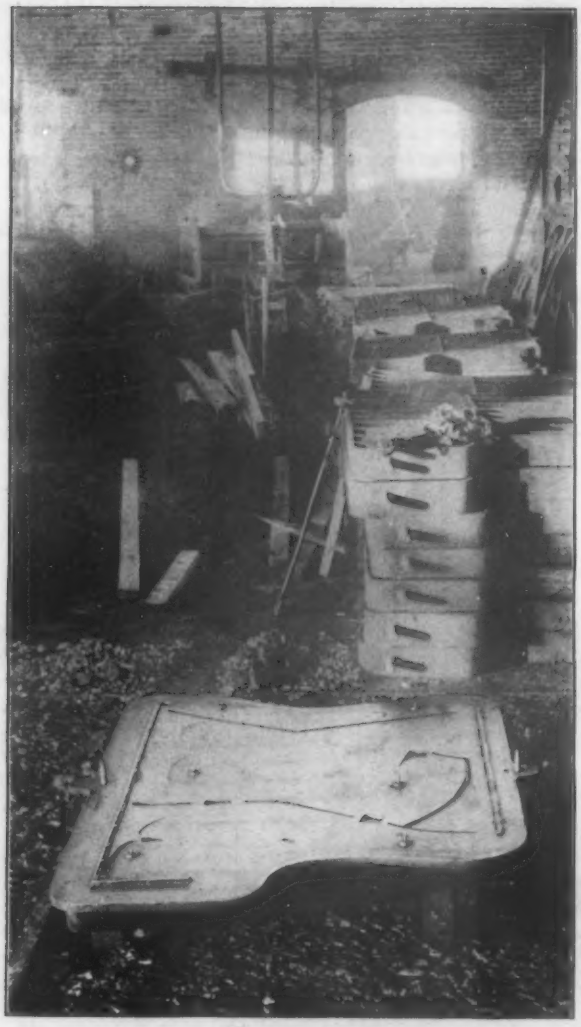


Fig. 5.—The Cope Stand Is Shown in the Foreground and in the Background a Part of One of the Sand Heaps Before Beginning Molding Operations.

necting with the wind belt of the cupola and the other extending outside of the building. Each pipe is provided with a gate to regulate or shut off the blast, and if too much air is being delivered into the cupola the gate in the other pipe is opened, thereby reducing the volume of air to the furnace. This arrangement permits of the easy regulation of the blast, which is under the control of the melter at all times. No special iron mixture is used, only that ordinarily required for making light castings.

After the castings have been cleaned they are conveyed to the finishing department on trucks operating on an industrial railroad track, shown in Fig. 1. Japan is then applied to the plates, and they are permitted to remain 3 hours in an oven heated to 350 degrees F. After removal from the oven and cooling, the plates are rubbed and varnished and are again placed in an oven heated to 180 degrees F., where they are permitted to remain for 2 hours. The castings are rolled into the ovens on trucks. After finishing they are delivered to the warehouse by an electric car operating in the yard, on the same trucks by which they were conveyed to the finishing department from the casting cleaning room.

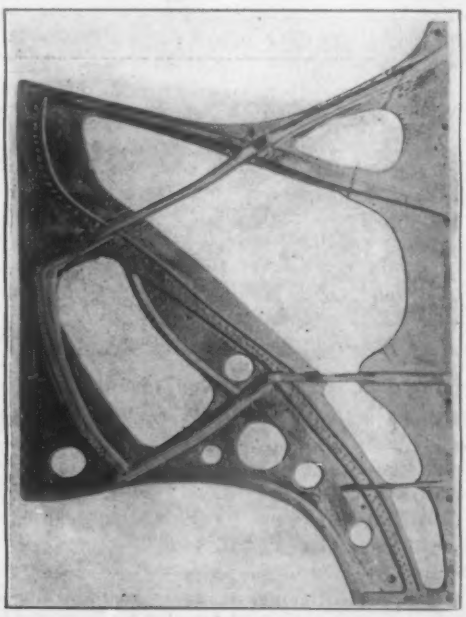
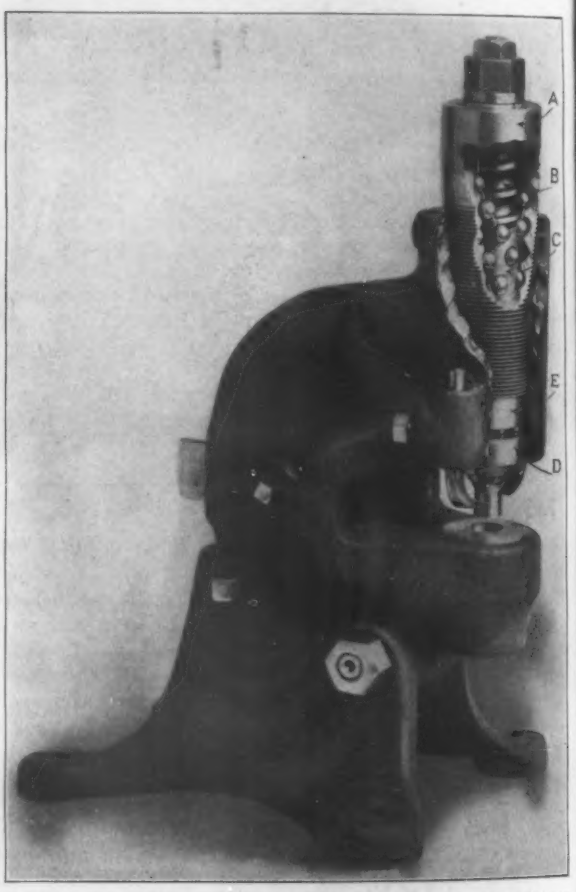


Fig. 6.—One of the Piano Plate Castings with the Pins Cast In.

The Whitney Ball Bearing Rotary Hand Punch

A new type of hand punch is being manufactured by the Whitney Metal Tool Company, 222 East State street, Rockford, Ill. The special feature of the punch is the



The New Ball Bearing Rotary Hand Punch Made by the Whitney Metal Tool Company, Rockford, Ill.

means by which the rotary motion of the head is converted into a reciprocating one to operate the punch slide. This is one of a number of applications which is covered by the patent secured by W. A. Whitney of this company.

The punch consists of a cylindrical barrel, which forms a part of the frame, the punch stock and a bushing. This last, A, is threaded externally, these threads engaging with the interior threads on the cylindrical portion of the punch frame. The bushing is rigidly secured in place by a set screw and virtually forms a part of the cylindrical barrel. The form of the bushing is that of an elongated cylinder having a spiral groove on its interior for a ball raceway, which corresponds to one in the spindle B. This spindle moves vertically with relation to the bushing as well as rotating in it. A cylindrical ball spacer, C, which has both rotary and longitudinal movement with relation to both the spindle and the bushing, is interposed between them. This

spacer has openings arranged in a spiral series to space the balls in the bearing, which lies partly within the groove on the spindle and partly in that on the bushing, thus constituting a screw engagement with the spindle. The office of the spacer is to hold this series of balls so that they move as a unit.

A punch is fastened to the end of the spindle, but in such a way as to be prevented from rotating. The stem carrying the punch projects through a central opening in the spindle, and on the lower end of this stem is a shoulder forming a ball cup, D, which makes a similar one, E, on the lower end of the spindle, the pressure of the spindle being transmitted to the punch through anti-friction balls interposed between these two cups. A lock nut on the upper end of the stem prevents any longitudinal movement of it with relation to the spindle.

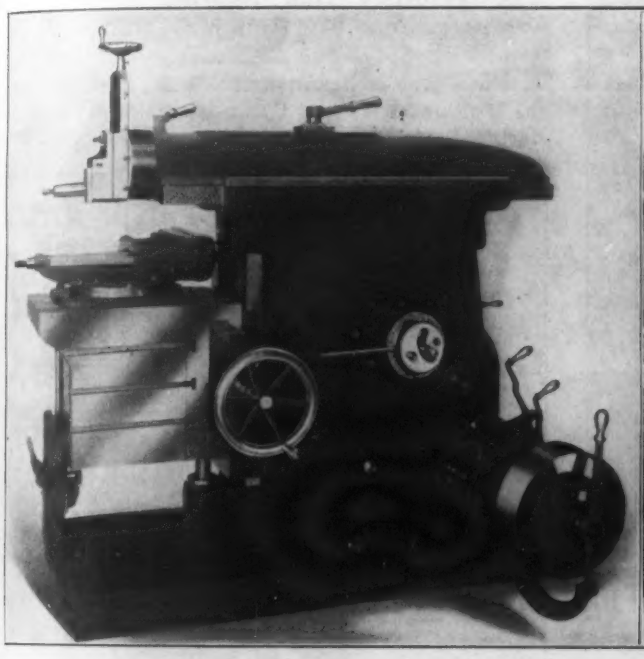


Fig. 1.—The Clutch Pulley Drive.

Fig. 2.—The Motor Drive.

The 24-In. Back Geared Crank Shaper Built by the John Steptoe Shaper Company, Cincinnati, Ohio.

The punch is operated by placing a wrench lever on the nut on the top of the spindle and turning it so as to cause the spindle to move down, following the screw thread formed by the spiral series of balls. The spindle does not slide upon the thread, but the balls composing it roll in the grooves in the spindle and the bushing and travel down when the spindle moves in that direction and upward when its motion is reversed. In this way the friction is reduced to a minimum and practically all the power applied to the spindle is transmitted to the punch. A collar on the upper end of the spindle limits the downward motion.

If desired the entire mechanism can be removed from the punch stock by taking out the bushing. The punch frame is pivoted and can be inclined to various angles to suit the work. Three sizes of punch are made at the present time. The smallest weighs 11 lb. and will punch a ⅜-in. hole through a ⅜-in. boiler plate. The medium size will punch ⅝-in. holes through the same thickness of plate and weighs 25 lb., while the largest punch has a capacity ⅛ in. larger and weighs 20 lb. more.

Mechanical Engineers' Spring Meeting

The sixty-third meeting of the American Society of Mechanical Engineers will be held in Pittsburgh, Pa., May 30 to June 2, inclusive. It has not met in that city since 1884. Out of a total membership of over 4000 the society has in the Pittsburgh district alone a membership of about 160. An Executive Committee, consisting of E. M. Herr, chairman; George Mesta, J. M. Tate, Jr., Chester B. Albree, D. F. Crawford, Morris Knowles and Elmer K. Hiles, secretary, will have charge of the Pittsburgh meetings. It is expected that from 300 to 400 members and ladies will be in attendance. In addition to the professional sessions, where papers will be read and discussed, there will be inspection trips through the leading local industrial establishments, besides automobile trips through the parks, a visit to Carnegie Institute, Memorial Hall, &c.

The Steptoe 24-In. Back Geared Shaper with Speed Box

The John Steptoe Shaper Company, 2951 Colerain avenue, Cincinnati, Ohio, has brought out a new type of back geared shaper equipped with a speed box. The special feature of this tool is the simplicity of the drive which consists of a pulley mounted on the end of the speed box shaft when the machine is belt-driven, as shown in Fig. 1. When the motor drive is used, as illustrated in Fig. 2, there is a small gear on the motor armature which meshes with a larger one on the speed box shaft. The construction of the drive is such that no part of it is apt to get out of order.

The machine is started and stopped by a clutch on the end of the shaft, which operates very easily. All of the mechanism is fully inclosed, so that all danger of the operator getting caught is eliminated. The speed box provides four changes of speed, and this is doubled by the back gears.

The speed box is supported by a heavy brace projecting from the base of the shaper. Its arrangement is such that no clutches are used. There are no idly running gears on the shaft, and all possibility of noise or wear on the hole in the center of the gear is avoided. All the gears are keyed to the shaft, and the only wear is when they are in actual operation. The engagement of one gear shifts the other out of position automatically, an arrangement which results in a very effective drive. All the speed box bearings have ring oilers, and there are spiral channels in the shafts to distribute the oil over the entire bearing.

Where the driving shaft from the shaper enters the feed box there is a large bushing which enters the column of the shaper and also the speed box bearing. This arrangement relieves the driving shaft of any strain which might come from the speed box. This bushing has ring oilers both in the column of the shaper and in the speed box. The intermediate shaft of the shaper also has ring oilers and bushings which can be removed and replaced at any time.

When the tool is equipped for motor drive a General Electric 3-hp. constant speed motor, operating at approximately 1200 rev. per min., is employed and is set on a sub-base, which is cast on the shaper base. In this way the motor has a very solid foundation, which does away with the possibility of the machine vibrating when in operation.

The Chicago Pneumatic Tool Company has re-elected its directors with the exception of John W. Dudley, who is, was succeeded by J. H. Ward.

S. [illegible] & SONS.
[illegible]
PITTSBURGH, PA.

The New American Lathes

Great Power, Three Types of Drive and a Special Quick Change Gear Mechanism Characterize These Two Sizes

Two new types of high duty lathes have been brought out by the American Tool Works Company, Cincinnati, Ohio. They are said to be the latest and highest developed type of this class of machine tool and to surpass in power, range and convenience previously designed lathes of similar sizes. These tools are of the triple geared type and are built with a cone pulley head, a belt-driven geared head and a motor-driven geared head. A general view of the cone pulley head lathe is given in Fig. 1, and the headstocks of the other two types are shown in Figs. 3 and 5 respectively. Fig. 2 is a view of the feed index plate which forms a part of the equipment of all three types, and Fig. 4 shows the index speed plate furnished with both styles of geared head tool.

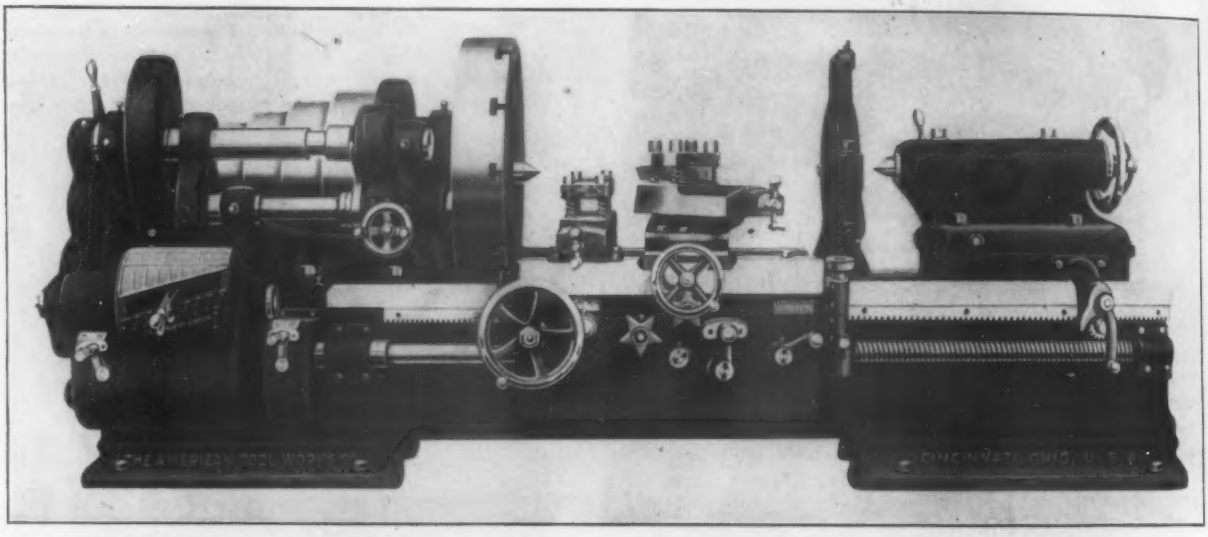


Fig. 1.—One of the New Cone Pulley Head Lathes Built by the American Tool Works Company, Cincinnati, Ohio.

Some idea of the enormous power of these tools, which are made with swings of 36 and 42 in. respectively, can be gained from the fact that for the motor-driven one a 20-hp. motor is recommended by the builder who guarantees the lathe to work without strain under a motor overload of 50 per cent. For the belt-driven machine the speed reduction between the countershaft and the spindle is very great. For motor drive a constant speed motor can be advantageously employed or if preferred one of the adjustable speed type with a variation of 35 per cent. can be used.

The Quick Change Gears

The most important feature of these new tools is the rapid change gear mechanism. All of these gears are either made from bar steel or drop forgings, and the mechanism is embodied in a self-contained unit carried on the front of the bed. It provides 32 fundamental thread changes ranging from 1 to 14 per inch, and in addition to this a compound quadrant gear on the end of the bed furnishes 16 additional changes. In this way 48 thread and feed changes ranging from 1 to 28 threads per inch and including the standard 11½ pipe thread and a feed of from 0.25 to 0.0041 in. are provided. All of the 32 changes in the gear box are obtained through the medium of a cone and tumbler gear and two selective sliding clutches, and any change can be instantly obtained while the machine is running. Any odd threads or feeds which may be desired from time to time can be secured through the quadrant at the end of the bed. All of the cone gears are of the Brown & Sharpe 20-degree involute pointed type, which gives an especially strong tooth and facilitates the engagement of the gears while running. The special feature of this mechanism is the elimination of the necessity for speeding up for different feeds or threads, as the coarser ones are all obtained through the cone gears, and at no time does any member in the box run faster than the initial driving gear. An index plate shown in Fig. 2 has been completely worked out and is in full view of the operator on the front of the gear box, showing the exact setting for each thread or feed.

The Drive

In the design of the head care has been taken to do all the driving either by short shafts or sleeves. In this way there are no long shafts in torsion at any time, and all possibility of binding or chatter is said to be eliminated. All the gears in the driving mechanism are of exceptionally coarse pitch with wide faces, and the pinions are cut from steel bars. The headstock for the cone pulley lathe, which is illustrated in Fig. 1, is built with triple gearing of the slip gear type and furnishes

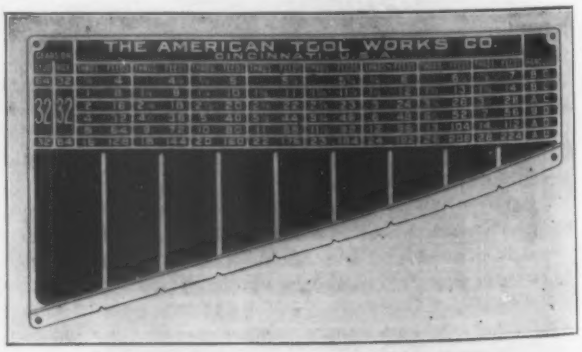


Fig. 2.—The Feed Index Plate.

12 spindle speeds. The four steps of the pulley are each 5 15-16 in. wide. The spindle bearings are of high grade phosphor bronze and are provided with means for making all necessary adjustments. The triple gears are readily engaged by a rack and pinion at the front of the head by manipulating the hand wheel. These gears are of coarse pitch with wide faces, and the internal gear is planed integral with the face plate, the pinion being cut solid with the steel shaft.

A single pulley belt drive with the geared head, illustrated in Fig. 3, can be furnished if desired. This headstock is also of the triple geared type and is designed for great power. By supplying a belt speed as

high as is consistent with good practice, the maximum efficiency has been secured. The driving pulley is mounted on an individual shaft supported by a massive boss at the top and back of the head and great power is secured from a narrow belt by making the pulley of a large diameter. In this way there is less wear on the belt, the first cost of the belting is materially lessened and the pull on the bearings greatly reduced. The arrangement of the slip gears used is simplified as far as possible to

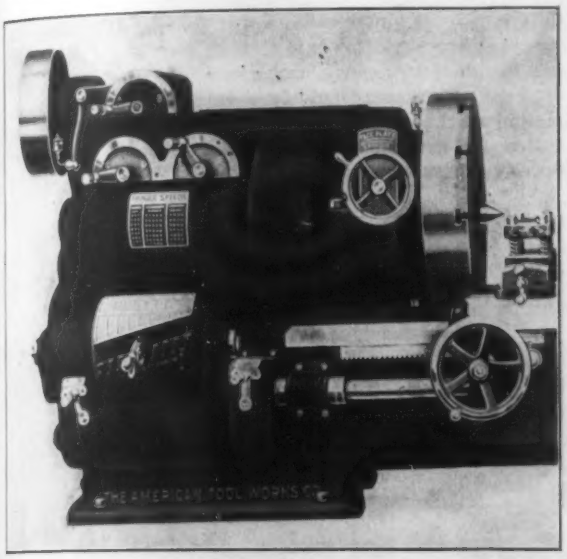


Fig. 3.—The Headstock of the Belt-Driven Geared Head Tool.

secure a direct drive with a minimum friction loss. Handles on the front of the head control the operation of these gears, and their engaging sides are machine rounded, thus enabling them to drop into place without clashing. The driving pulley has a sensitive but at the same time powerful friction clutch, which enables the gears in the head to be stopped or moved slightly without throwing off the countershaft, which is a very convenient feature in making speed changes. At any time after installation the belt-driven headstock can be quickly and easily converted into the motor drive, shown in Fig. 5, by removing the pulley drive and placing the motor on top of the headstock where there is a flat planed surface and connecting the motor to the driving shaft of the headstock through spur gearing. The construction of the driving pulley has been very carefully worked out. It is mounted on a large diameter steel sleeve and relieves the driving shaft of all belt pull. The pulley is also self-oiling, its hub forming a retainer for the lubricant, which is fed to the shaft through felt wipers. In

THE AMERICAN TOOL WORKS CO.,
CINCINNATI, U.S.A.

HANDLES ON	SPINDLE R.P.M.	FACE PLATE R.P.M.
A D E	250	19
B D E	180	14
A C E	130	10
B C E	95	7
A D F	70	5½
B D F	50	4
A C F	36	2¾
B C F	26	2

Fig. 4.—The Index Plate of the Speed Change Gear Box.

this way a circulation of oil is maintained and a fresh supply is constantly fed to the shaft.

The 16 spindle speeds are obtained through positive selective clutches and slip gears, the former being easily engaged while the gear teeth are machine rounded, thus causing them to slide into mesh easily. All the gears are mounted on a long bronze sleeve lubricated by sight feed oilers from the outside of the head. Eight of the spindle speeds are obtained through the spindle gear, and the remainder through the face plate drive, which is a distinctive feature of these lathes, as ordinarily only one-third of the speeds are obtained through the face plate drive. With this latter type of tool the spindle gear has to be used for a large amount of heavy turning on work of large diameter, which in these lathes is handled through the face plate drive. All the speed changes can be made without stopping the initial drive, as the machine can be started, stopped or its speed varied by a friction clutch, which engages and disengages the driving pulley or motor gear and the shaft. This clutch is operated by the lever shown at the right side of the pulley, Fig. 3. The control is very sensitive, and the operator is thus enabled to make the various speed changes quickly. The positions of the lever for the various spindle speeds are plainly indicated on the index plate on the front of the head. This plate, which is illustrated in Fig. 4, has been worked out very carefully and affords a simple and easy means for indicating how to obtain the various spindle speeds.

A constant speed motor is located on top of the geared head and connected to the main driving shaft through spur gearing, as shown in Fig. 5. The stopping and starting of the motor is controlled by a conveniently located handle on the right end of the carriage, and the

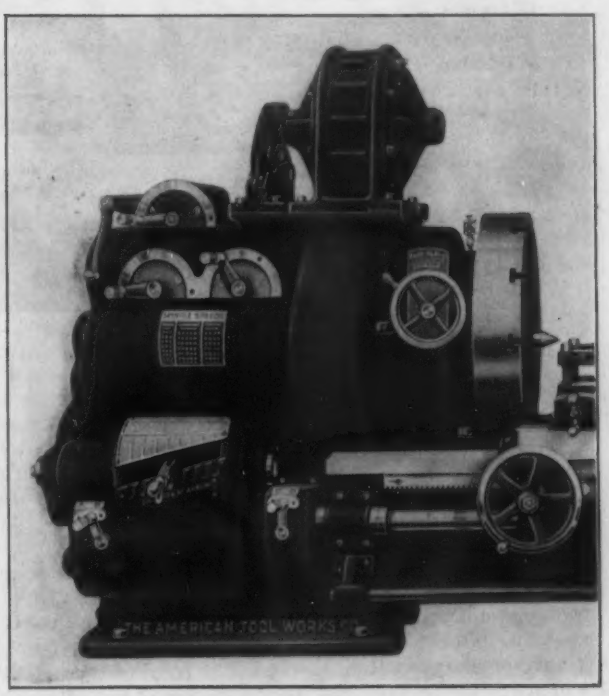


Fig. 5.—The Headstock of the Motor-Driven Geared Head Pattern.

various speed changes are made through the manipulation of the levers on the front of the headstock. The speed of the motor can be comparatively high, 700 to 1000 rev. per min. if desired.

Constructional Details

The bed is of the maker's special drop V pattern, which gives a large additional swing and permits the carriage bridge to be deepened more than is possible with the standard type of bed. It is deep and heavy and is braced by cross-box girts placed at short intervals throughout its entire length. As the construction approaches an I-beam in section instead of making the bed exceptionally wide sufficient rigidity is secured to resist the heaviest cuts without vibration. A web cast through the center, which carries a rack for the tailstock engaging pawl, still further stengthens the bed. The V's are large and accurately scraped. The tailstock can be slipped off without taking out the holding bolts, as the wall at the end of the bed is cut. The bearings for the gear box and the lead screw are seated with a tongue and groove fit, which secures accurate permanent alignment, and the steel feed rack has teeth cut from a solid bar. The carriage is very heavy, especially in the bridge, and has a full continuous bearing of 50½ in. on the outside V's

and additional bearings on the top and the inner surface of the front V. This enables the forward thrust of the tool to be resisted and at the same time gives a bearing directly beneath it. The carriage is gibbed throughout its entire length at the back, and a clamp is provided on each end at the front, the one at the right being used to bind the carriage to the bed. The apron, which extends the entire length of the carriage, is tongued, grooved and firmly bolted to it, and the construction is of the double wall type, which provides all shafts with two bearings. The cross and the longitudinal feeds are reversed through a lever at the front of the apron and not at the headstock, a feature which is especially valuable on long beds where the operator is at some distance from the headstock. The cross feed is positive in action and can be released instantly under the heaviest load. A lever on the front of the apron controls the half nuts. Steel is used for all the gears and pinions in the apron, which are of coarse pitch with wide faces and are cut from the solid by special cutters. When cutting screw threads the rack pinion can be withdrawn from the feed rack and a non-interfering device is furnished which makes it impossible to engage the feed and the screw cutting mechanisms simultaneously.

The spindle is of high carbon hammered steel and has a hole 2⅝ in. in diameter throughout its entire length. All loose gears have been eliminated together with their attendant vibration. The only gear attached to the spindle is the driving gear, which is located close against the bearing. In this way the spindle is not subjected to severe torsional strains, a feature which adds greatly to the life of the bearing and the alignment of the spindle itself. The taper construction and an extra large diameter are used which insure great rigidity and power. All of the bearings are bored out from the solid and are lined with large phosphor bronze bushings. The spindle speed range for the geared head tools is from 2 to 250 rev. per min.

The construction of the compound rest is very heavy. The top and bottom slides have full length taper gibs with end screw adjustment, thus providing continuous accurate bearings. The top slide has a 14-in. power angular feed micrometer adjustment and a four-stud tool holder. The steel mitre feed gears are planed from the solid. The swivel has four clamping bolts in the base and is graduated to 90 degrees on each side of the zero point. An exceptionally solid bearing is secured on account of the wide carriage bridge.

The tailstock is of massive proportions and has long continuous bearings on the ways. It is moved along the bed by a crank and gear and is of the quadruple clamping stud type with the studs running to the top of the barrel. A further guard against movement is secured by a pawl which engages a rack cast in the center of the bed and which can be lifted out of engagement by a pull rod on the end of the tailstock. The solid large diameter tailstock barrel is equipped with an improved type of plug-binder for clamping the spindle. The tailstock has the set-over feature for turning tapers and is of the off-set type which allows the compound rest to be set parallel with the bed. The travel of the spindle, which is graduated in inches, is very long and is controlled by a dished handwheel, which brings the rim closer to the operator and is free from the motion and back lash of the gear operated type. A projecting nose on the tailstock, which is further reinforced by a wide rib extending from the tip to the base provides an extra support for the spindle when it is extended.

The following table gives the principal dimensions and specifications of the two sizes of lathes:

	36-in.	42-in.
Standard length of bed, feet	12	12
Distance between centers tailstock flush geared head, feet	4	4
Distance between centers tailstock flush cone head, feet	5	5
Diameter of hole through spindle, inches	2⅝	2⅝
Size of tool regularly used, inches	1 x 2	1 x 2
Power angular feed to compound rest, inches	14	14
Swing over bed, inches	37¾	44
Swing over carriage, inches	23⅜	30⅝
Width of driving belt, inches	6	6
Diameter of driving pulley, inches	20	20
Speed of driving pulley, revolutions per minute	475	475
Morse taper of centers	No. 6	No. 6

Special provision for lubrication has been made in both sizes, and every bearing has been carefully provided for, sight feed oilers being extensively used. The regular equipment includes compound, steady and full swing rests; countershaft for belt drive and wrenches. An improved taper turning attachment, a turret on the carriage, a turret on the shears and the geared headstock for belt or motor drive instead of the cone pulley drive can all be furnished as extras.

The Osborn Molders' Bellows

Two new types of molders' bellows have been placed on the market by the Osborn Mfg. Company, Cleveland, Ohio. In making them chemically treated canvas has been substituted for the calfskin or horsehide usually

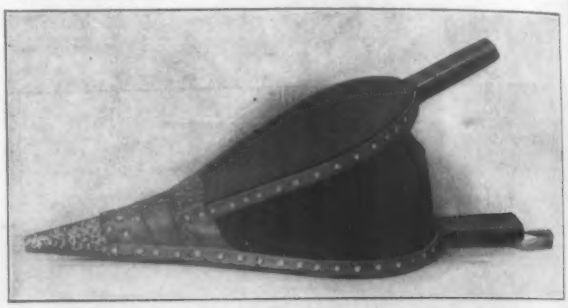


Fig. 1.—The Plain Molders' Bellows Made by the Osborn Mfg. Company, Cleveland, Ohio.

employed. Fig. 1 shows the regular plain bellows and Fig. 2 illustrates the Cyclone type.

Both of these styles have been previously made by this company in other materials, but it is claimed for the new canvas bellows that they will be equally efficient and give much longer service without increasing the cost, the results of the tests showing that in some cases the canvas lasted three times as long as the ordinary material. After the canvas has been chemically treated it is said to be very pliable, will not split, tear or crack

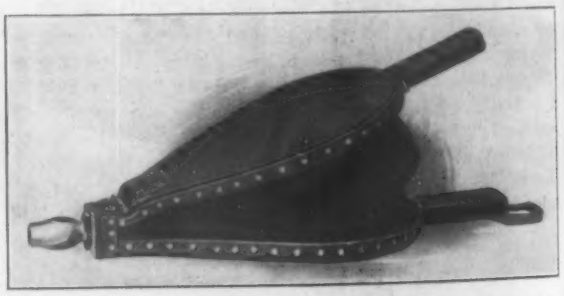


Fig. 2.—The Cyclone Bellows, Made with Chemically Treated Canvas.

and is air tight and moisture proof. Six regular sizes, all of which are made by hand, can be furnished, the width varying from 8 to 14 in. Among the special points claimed for the Cyclone bellows is that there is no interior obstruction to the blast. The hinge is of steel and an aluminum spout in which there are large side holes insuring the maximum amount of wind is used.

The Westinghouse Electric & Mfg. Company, Pittsburgh, is constantly receiving orders for electrical equipment for export, among recent contracts taken being the following: Rio de Janeiro Tramway Light & Power Company, Rio de Janeiro, Brazil, two 2500-kva., 6300-volt, three-phase, 50-cycle turbo-generators, for which the Westinghouse Machine Company will furnish the turbines, which will be equipped with No. 11 Leblanc condensers; Nikkon Gas & Electric Company, Nikkon, Japan, one 200-kva. rotary converter, two 12[illegible]-kva. O. I. S. C. transformers and one three-panel switch-board; Cia Beneficiandora de Pachuca de Mexico, one 915-kva. O. I. S. C. auto-transformer.

Cutler-Hammer Alternating Current Motor Speed Controllers

Recently a large variety of alternating current apparatus has been standardized by the Cutler-Hammer Mfg. Company, Milwaukee, Wis. This standardization includes apparatus, the greater part of which has heretofore been manufactured with various changes as special apparatus, and was made to meet the demand existing for alternating controlling apparatus to be used in plants where only alternating current was available. Slip ring induction motors are adapted for service where speed regulation is required, and both types of speed regulator and controller are designed for use with this type of motor. Fig. 1 shows the face plate regulator, and Fig. 2 illustrates the drum design for controlling printing presses, machine tools and other similar machines.

The face plate regulator is compact, inexpensive and practicable. The contact segments are of hard drawn copper, and can be readily replaced or interchanged without interfering with the interior connections. The resistance is self-contained, and the three sets are star connected, so that equal amounts are inserted in the three phases of the secondary circuit, thus insuring a balanced condition. As the maximum output of the motor can be seriously affected by unbalanced current or voltage in the legs of the circuit, this balancing feature is very important. To insure accurate speed control in the small regulators special resistance wire having practically a zero temperature coefficient is used. Several styles and types of regulator are made in sizes ranging from ¼ to 50 hp., and the standard apparatus is designed to reduce the speed 50 per cent. at full load.

An alternating current drum type controller similar in design to the company's direct current controller of the same type has been designed for controlling the speed of motors operating printing presses, machine tools and other machines of a similar character. It is possible to secure full speeds in either direction with this controller, as a center latching device operated by a push button on the handle prevents injury by throwing the handle past the off point unintentionally. The design is as compact as satisfactory operation will permit. Hard drawn copper is used for the brushes and contacts which are mounted so as to make replacing easy. All the terminals and other parts are also readily accessible. In this type of controller the resistance for varying the speed of the motor is inserted in the secondary circuit. Standard controllers are made in capacities ranging from 1 to 7½ hp., and a speed reduction of 60 per cent. at full load is possible. These controllers can be easily mounted on the press or machine in locations convenient to the operator.

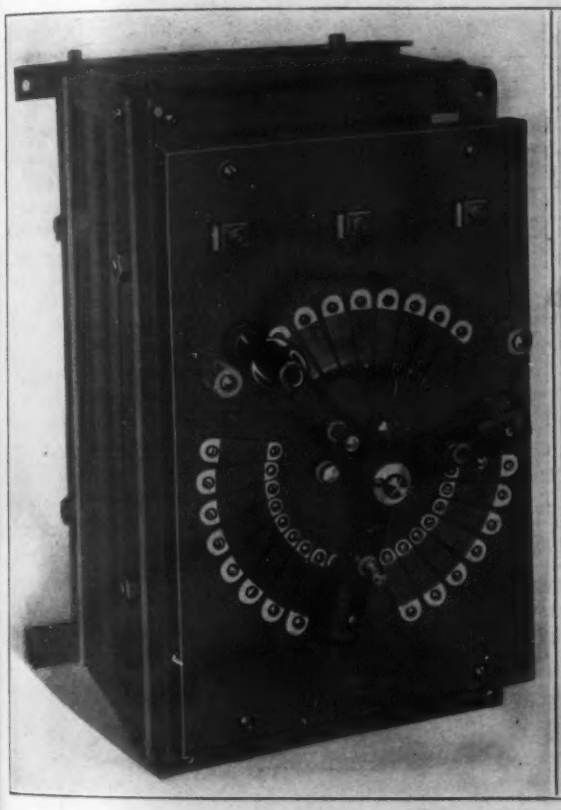


Fig. 1.—Face Plate Type.

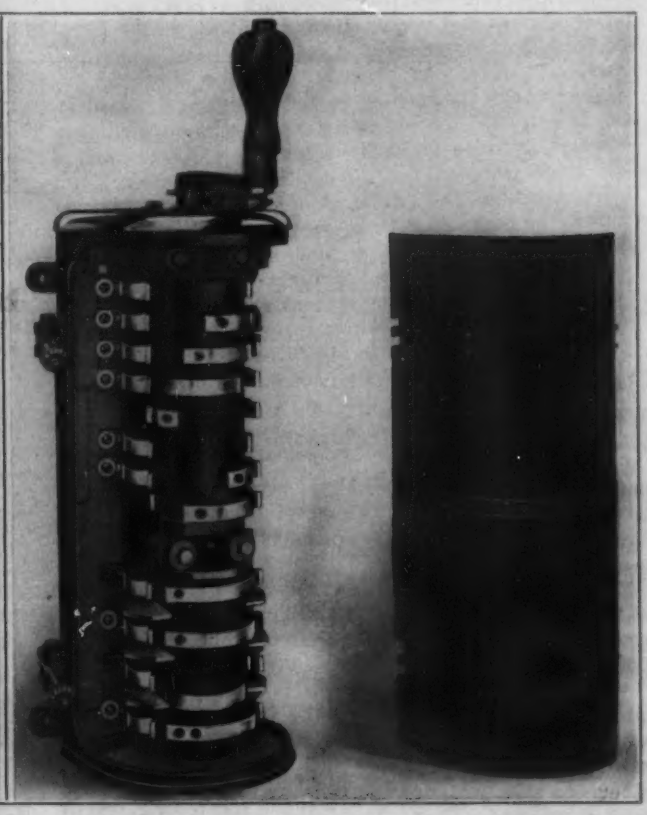


Fig. 2.—Drum Type.

Two New Alternating Current Motor Speed Regulators Built by the Cutler-Hammer Mfg. Company, Milwaukee, Wis.

The Causes for High Prices

According to Prof. Jeremiah W. Jenks of the Chair of Political Economy, at Cornell University, who recently spoke on the increased cost of living at Cooper Union, New York, under the auspices of the Board of Education, the cause of the increase is not the tariff alone but a coalescence of causes. The increased price of meat was due, he said, to the fact that most of our cattle are now stall-fed, instead of being grazed upon pastures.

The increased cost of foodstuffs he attributed to advertising and transportation, and of wool to a much larger demand and a smaller supply. Then, again, the increase in the production of gold has much to do with the cost of living. He further said:

"There has been much outcry against the great corporations as factors in increasing prices. Beyond doubt these combinations may, and at times do, affect prices. In some instances they have doubtless raised prices. In other cases they have held prices down. Sometimes they have steadied prices. But the facts show that they, with rare exceptions, have not been prominent factors in the late general increase of prices. The late changes in the tariffs have had little, if any, appreciable effect upon prices. The facts are, of course, that while the various changes have increased rates on certain products and lowered them on others, the average rates have not been materially affected since the war tariffs."

Hall Furnace of the Republic Iron & Steel Company, at Sharon, Pa., has been blown in, after being idle since December.

A Monorail Grab Bucket Coal Hoist

A Recent Installation Made by the Cleveland Crane & Engineering Company

Handling fuel and ashes in a power plant by hand is extremely expensive, hence conveying systems, automatic stokers, industrial railways, &c., are used in all large and modern plants. An interesting equipment for the purpose is the monorail grab bucket hoist that the Cleveland Crane & Engineering Company, Cleveland, Ohio, has recently installed at the plant of the Kalamazoo Paper Company. Fig. 1 is a plan of the boiler room showing the layout of the track and Fig. 2 is a view in the boiler room showing the hoist in operation, while Fig. 3 gives details of the hoist and the grab bucket.

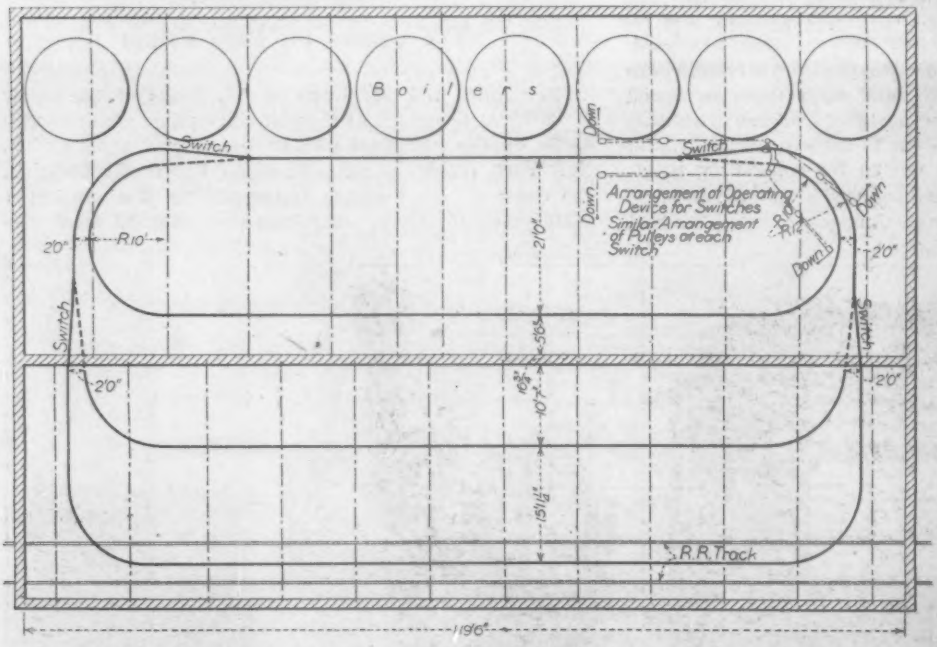


Fig. 1.—Plan of the Kalamazoo Paper Company's Boiler Room, Showing Layout of Monorail Hoist Track Installed by the Cleveland Crane & Engineering Company, Cleveland, Ohio.

The hourly coal consumption is 35 tons, to handle which cost a great deal with the former facilities, involving considerable hand labor. From Fig. 1 it will be seen that the boiler house has eight vertical boilers along one side, while at the opposite side is a coal shed with a railroad siding. The boiler room floor is about 8 ft. below the track level, and the coal when dumped into pockets runs through arches in the wall separating the coal shed from the boiler room, as shown in Fig. 2. Originally the coal was handled from this point by a small electric traveling crane with scoop buckets, in which the coal was shoveled and then hoisted and carried across the boiler room and discharged into the stoker hoppers extending along the front of the boilers. The coal which would not run through the arches also had to be shoveled until it could be loaded into the buckets.

To reduce this expense a Cleveland monorail bucket hoist and a 1¼-yd. Williams two-rope bucket were installed. The tracks are arranged as shown in Fig. 1 and the switches can be thrown by hand from the operator's cage as the hoist approaches them from either direction, while automatic stops prevent the hoist from running off the end of the rail if the switch is not properly set. Thus a four-track system was laid out, making it possible to take coal directly from the cars on the railroad siding, from the dumping pits in the coal shed or from the pit in the boiler room and carry it directly to the stoker hoppers. The hoist employed was the company's standard two-drum monorail grab bucket hoist, and is peculiarly adapted for the location and the quantity of coal handled.

One of the drums of the hoist winds the closing line and the other the hoisting rope; both are operated by the same motor through friction clutches controlled from the operator's cage. The bucket is lowered, opened and closed by gravity, which is considered preferable to using separate motors for the hoisting and lowering, as the speed of a series motor if employed in lowering the load would not exceed twice the hoisting speed. With a gravity fall any lowering speed can be obtained, the motor being inoperative when the bucket is being lowered or opened, which is important especially on high lifts. After the bucket has been lowered to the coal pile or car and is closed, both drums lift the load. The bucket is held suspended by a self-lubricating mechanical double friction brake, which eliminates the necessity for the operator to watch the buckets constantly. The hoisting drums have band brakes actuated by a foot lever controlled from the operator's cage to relieve the hoisting clutches of wear when the bucket is being lowered, while those employed for raising the load act as safety devices in case of overhoisting, since they will slip before the hoisting ropes are dangerously strained. The hoist has two four-wheel swivel trucks which run on the bottom flange of an I-beam. The hoist is traveled by gear drive to the wheels of one truck from a motor attached directly to the swivel truck. This allows running around short radius curves, which was very important in this installation since short turns were necessary at each end of the boiler room in passing from the coal pit to the stoker hoppers on the opposite side. The

Fig. 2.—View in the Boiler Room.

hoisting motor is a 220-volt direct current 20-hp. General Electric crane motor and the traveling motor one of the same type of 10 hp. The operator's cab is attached to the hoist as shown in Fig. 3. The controllers, switchboard, resistances, levers for operating the friction clutches and the foot levers for the lowering brake are all conveniently located in the cab.

Small cars running on a system of tracks below the firing floor convey the ashes from the boilers to one end of the building, where they are dumped. The grab bucket picks the ashes up at this point and carries them to the coal shed, where they are dumped into cars for

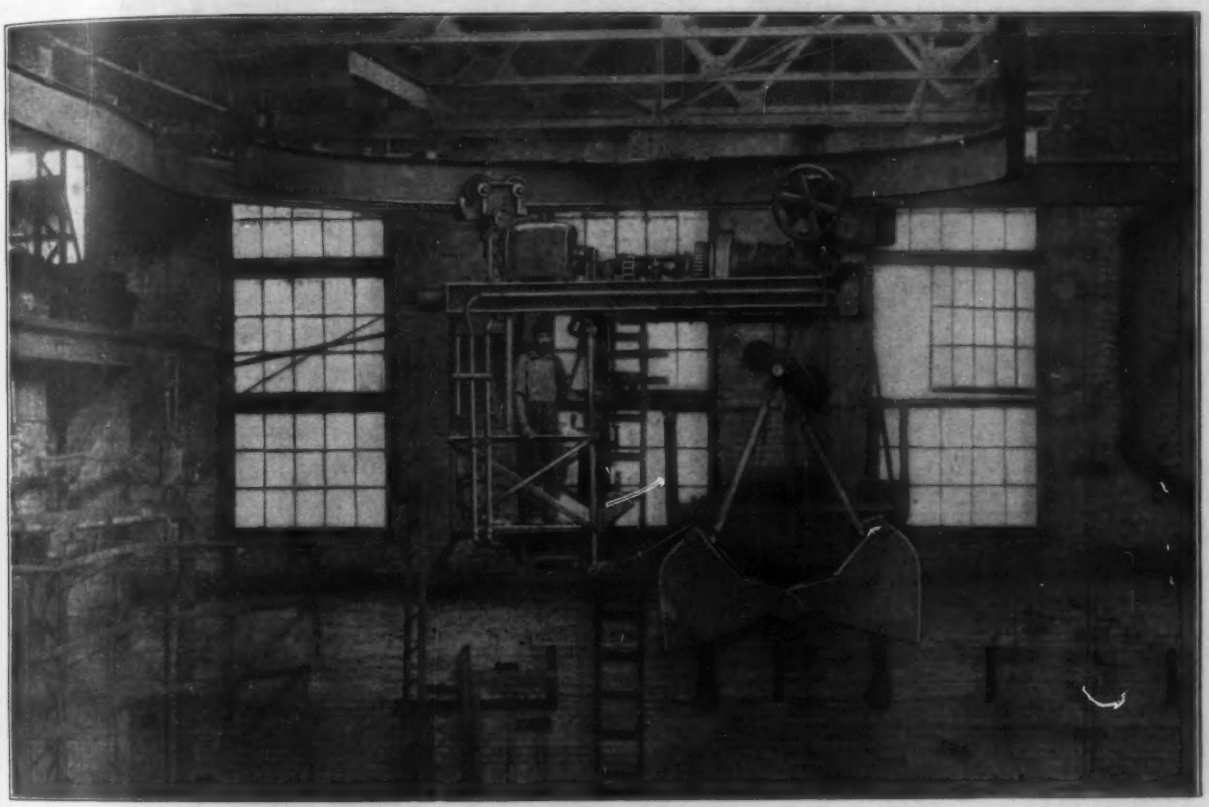


Fig. 3.—Details of the Hoist and the Grab Bucket.

removal. Installing this machine has reduced the boiler room force by five, saving approximately $200 per month in wages, and only about the same amount of current is required as for the old floor operated traveling crane.

Accident Compensation in Minnesota

George M. Gillette, chairman of the executive committee of the Minneapolis Steel & Machinery Company, Minneapolis, Minn., is the author of a bill "to provide a code for the relief of workmen injured in employment, by an elective system of industrial insurance in the State of Minnesota," and it is submitted by him as a member of the Minnesota Workman's Compensation Commission. It accompanies the minority report of that commission. The bill is long and works out with great care the details of a system of industrial insurance and the procedure under it for both employers and employees. There are two general divisions: the first contains provisions annulling the defenses of assumption of risk and act of fellow servant; limiting liability for death resulting from accident to $3000; providing that employer and employee must elect to come under the code or continue under common law rights; defining liability for injury; also who are employers and who are employees and how each class may elect to come under the code; and finally providing that employees cannot hold both the right to recover damages under common law and the right to compensation.

The second division of the bill is devoted to elective compensation. It provides that the right to compensation and the remedy therefor granted in the bill shall be in lieu of all rights and remedies at common law or by statute. Employers and employees electing to accept the provisions of Division 2 shall thereafter be subject only to those provisions. Exceptions are made to the rule of compensation for injury to workmen where the injury is purposely self-inflicted to obtain compensation or due to intoxication or willful misconduct. It is also provided that there shall be no compensation for injury or death due to an act of God or to war or riot or for any disease. The liability of the employer is limited to an aggregate of $50,000 for bodily injuries or death caused by one accident. This limit is put in the bill in order to make the employer's liability insurable. The maximum death benefit is $3000; for total disability the maximum is $5000.

It is provided that neither of the two divisions of the code be adopted without the other. It is declared to be the intention that the employer shall not be deprived of the defenses of assumption of risk and act of fellow servant in cases where the employee does not elect to accept the provisions of Division 2 of the act. Where the employer does not elect to accept the provisions of Division 2 the amount of recovery for death by wrongful act is not limited to $3000 but remains at $5000 as under Minnesota laws at present.

Mr. Gillette's paper read before the Liability Insurance Association in New York and published in *The Iron Age* of October 28, 1909, page 1312, was a thorough presentation of the advanced view of accident compensation from the employer's standpoint. He spent several months in Europe last year investigating the operation of the workmen's compensation acts of the various countries and in studying the problem of accident prevention.

The American Plate Glass Company, Kane, Pa., will add a Westinghouse 23½ x 33 in. 700-b.hp. horizontal National gas engine to its power plant at James City. The engine will operate on natural gas. It will be connected to a Westinghouse 625-kva., 600-volt, three-phase, 25-cycle, alternating current generator, which will be used in supplying energy for power and lighting. The new equipment will operate in parallel with three 16 x 26 in. twin tandem and two 23½ x 33 in. single crank horizontal Westinghouse gas engines, which drive three 400-kw. and two 500-kw. Westinghouse generators, respectively.

The Rockford Vertical Miller

A New Machine for Producing Duplicate Parts

A new vertical milling machine particularly adapted for manufacturing duplicate parts, built by the Rockford Machine Tool Company, Rockford, Ill., has its vertical adjustment in the head rather than the knee. This new arrangement is claimed to have all the advantages of the adjustable knee without its undesirable features.

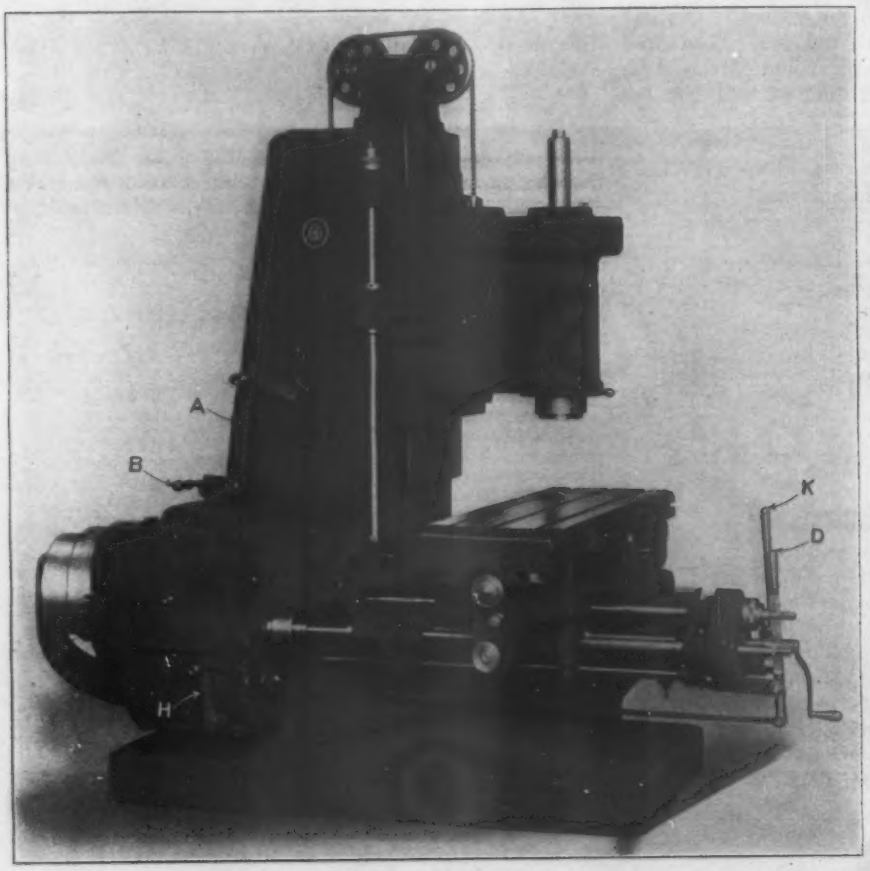


Fig. 1.—The New Vertical Milling Machine Built by the Rockford Machine Tool Company, Rockford, Ill.

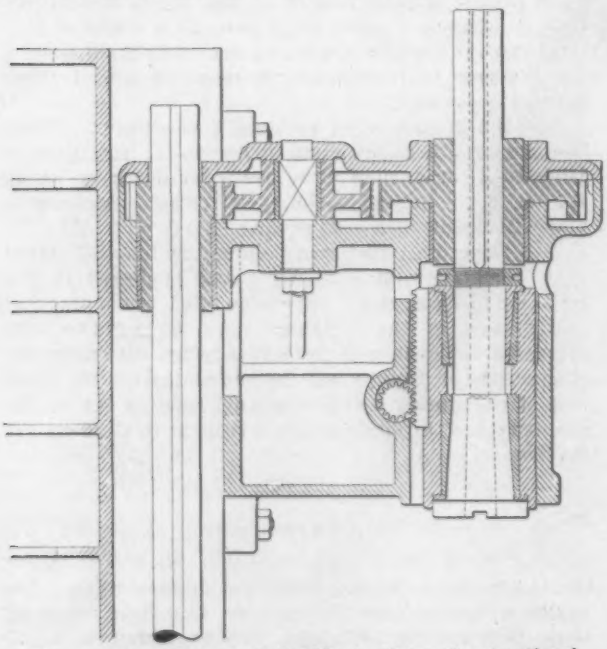


Fig. 2.—Cross Section of the Head, Giving Constructional Details.

Fig. 1 is a general view of the machine and Fig. 2 a cross section of the head giving constructional details. Figs. 3 and 4 show the details of the feed gear mechanism and the power quick adjustment, while Fig. 5 is a side view of the machine.

As shown in Fig. 1, the column and the horizontal slide for the saddle are cast in one piece. The table top is at a permanent hight of 30 in. from the floor, which is the same as that of a planer platen and is convenient for the operator in handling the castings or other parts being machined. The bearing of the head of the column is as ample as that of the knee on the column of the usual type machine. The head, however, weighs much less and is counterbalanced, thus relieving the bearing of much overhang and uneven strain which would rapidly destroy its accuracy. The spindle is tapered and adjustable in the head by a sleeve and worm gear. Twelve spindle speeds are provided, nine through back gears and three high speeds for small cutters with open belts. Twelve feed changes are also provided.

The drive is from a three-step cone pulley and three speeds for each step are instantly available through back gears by manipulating the vertical lever A, Fig. 1, on the side of the column. This lever interlocks with the lower one, B, preventing two conflicting combinations of gears being engaged at the same time. When the vertical lever is in its neutral position the sliding gears are all locked out of mesh. By moving the lower of the two levers to the right, the clutch is engaged with its mate which is cut on the end of the shaft carrying the cone pulley, and the three high speeds are transmitted directly from the cone pulley to the bevel gears on the vertical shaft. The driving gear on the spindle is shown in Fig. 2, which is a cross section of the head. Steel is used throughout, the pinion and the spindle being forgings and the large gears castings. The spindle is relieved of side strain by the large bearings with which the spindle gear is provided.

Fig. 3 shows the feed mechanism, which is driven by a spur gear on the back gear shaft. The clutch c, for engaging and reversing the feeds, is on the upper shaft, which has the highest speed of any in the box, and the lever D, Fig. 1, for operating the clutch, is conveniently located in front of the machine. Power from the clutch shaft is transmitted through the slip gears e and f, Fig. 3, at the end of the machine. Four changes are obtained by using two pairs of these gears, which are interchange-

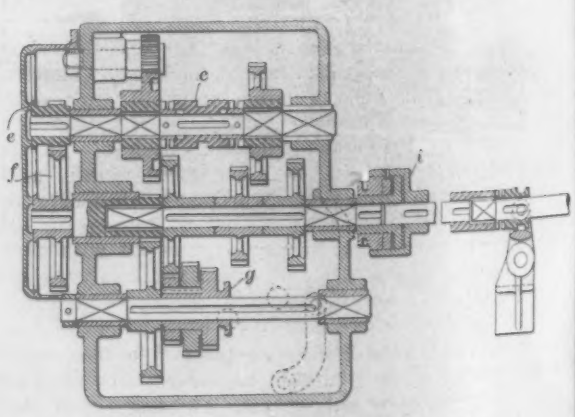


Fig. 3.—Details of the Feed Mechanism.

able. For each position of the slip gears three speed changes are obtained by the sliding gears *g* on the lower shaft, which are operated by the lever H, Fig. 1, on the front of the feed box. The 12 feeds, which range from ¾ to 17 in. per minute, can be applied to the table, the cross movement and the saddle and also to the head instantaneously. The friction *i*, Fig. 3, has sufficient power to drive any feed, but will slip before the feed

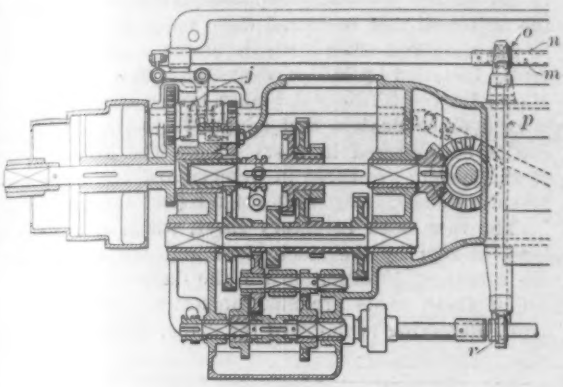


Fig. 4.—Details of the Power Quick Adjustment.

gears or other parts will break due to overload, such as accidentally feeding the saddle against the column or the table nut against either end of the saddle.

The power quick adjustment, shown in detail in Fig. 4 and also in Fig. 5, is new and saves time. The power is delivered through the reversible clutch *j*, Fig. 4, by spur gearing direct from the cone pulley shaft, and the transmission from the clutch shaft is through an angle shaft equipped with universal joints to the feed train in front of the machine. Fig. 5 shows the arrangement of the operating lever K, which is conveniently placed in front of the machine on the right side. This lever is

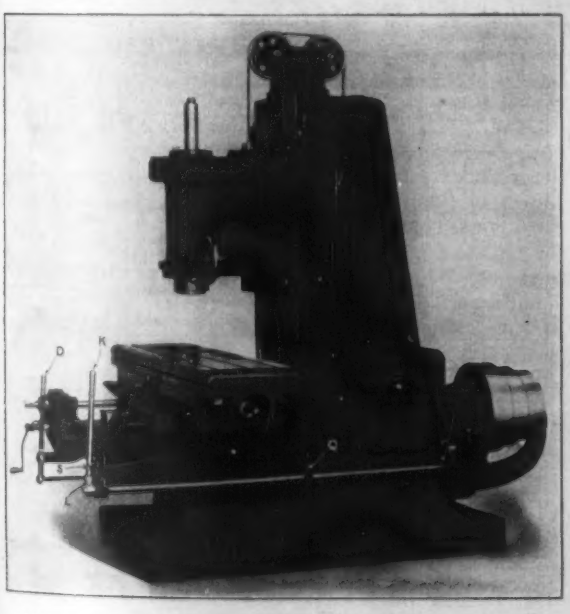


Fig. 5.—Side View, Showing the Power Quick Adjustment Mechanism.

also interlocked, making it impossible for the feed mechanism and the quick return to be engaged at the same time. The device is simple, both in construction and operation. In Fig. 5 the lever is shown with the power quick adjustment clutch locked in neutral position and the feed shaft clutch engaged. The lever is pivoted at L with the lower projection engaging a rod, *m*, Fig. 4, passing through the shaft *n*, which is connected to the collar *o* by a key in a slot in the shaft. The shaft *p* passes through the collar and is connected by yokes, Q, Fig. 5, at each side to the sliding collar and to the jaw clutch on the feed shaft *r*, Fig. 4. An outward movement of the operating lever disengages the clutch on the feed shaft and the lever is free to be moved in either direction past the projection on the bearing casting S, Fig. 5, which locks it in position, thus engaging the reversible clutch and applying power for the quick adjusting mechanism. When the machine is making duplicate parts all movements can be controlled by this one lever, by pressing which toward the machine again engages the feed. This in no way interferes with the operation and use of the automatic stops on the longitudinal and the cross movements.

All the slides are fitted with taper gibs, which are adjustable longitudinally to compensate for wear. The saddle slide has two gibs, the second one being a taper gib on the inside of the right-hand bearing, which insures perfect alignment when feeding under heavy cuts. All the movements of the table, saddle, head and sleeve are indicated by collars graduated to read in thousandths of an inch.

The following are the principal dimensions and specifications of the machine:

Distance from center of spindle to column, inches	15
Total length of table, inches	56
Working surface of table, inches	14½ x 48
Feed to table, inches	32
Maximum distance between table and spindle, inches	24
Minimum distance between table and spindle, inches	3
Vertical movement of head, inches	21
Width of head bearing on column, inches	19
Length of head bearing on column, inches	25½
Maximum diameter of spindle, inches	4
Minimum diameter of spindle, inches	3
Adjustment of spindle, inches	6
Diameter of smallest cone pulley step, inches	12
Diameter of largest cone pulley step, inches	15½
Width of driving belt, inches	4
Speed of countershaft, revolutions per minute	390
Hight of table from floor, inches	30
Number of spindle speeds	12
Minimum spindle speed, revolutions per minute	13
Maximum spindle speed, revolutions per minute	200
Minimum feed, inches per minute	¾
Maximum feed, inches per minute	17
Number of feeds	12
Net weight of machine, pounds	6,800

All the shaft bearings have wool felt oil retainers, and connected to all bearings are soft brass tubes 5-16 in. in diameter leading from an oil cup with a hinged cover.

The Pittsburgh Machine Tool Company's New Plant

The Pittsburgh Machine Tool Company, which for some years has been located on the North Side, Pittsburgh, and several months ago purchased a site of land in Braddock, Pa., has just placed contracts for the building of a new plant which will increase its capacity from 300 to 400 per cent.

There will be a main building, consisting of a brick structure of mill construction, 100 x 216 ft., with a power house annex, 30 x 40 ft. The power house will be equipped with an 80-hp. gas engine and 100-hp. steam engine. A crane runway with a 30-ft. span, 250 ft. in length, will be erected through the main building, which will extend over a railroad siding, and a 10-ton electric traveling crane will be installed.

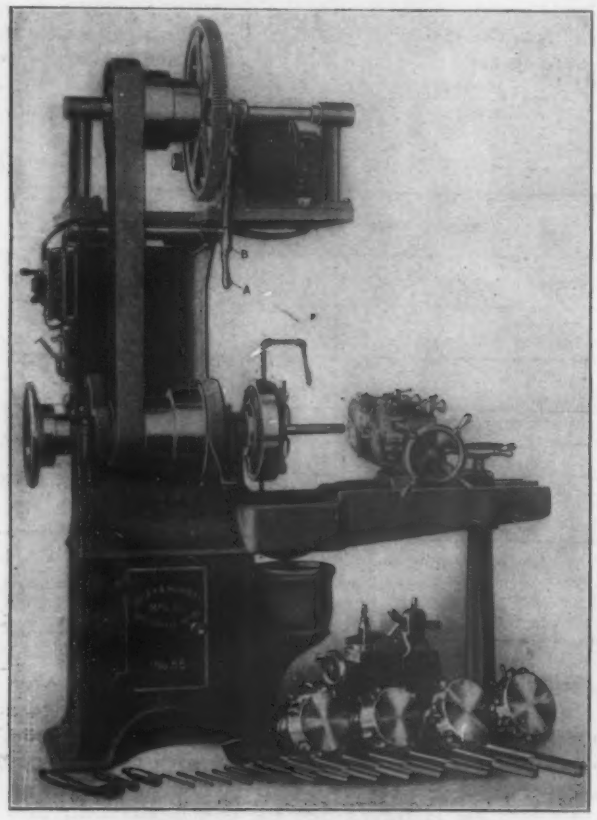
The company expects to have the new plant completed and ready for occupancy by May 1, when the equipment of the Pittsburgh plant will be moved there. The products, manufactured by the company comprise lathes and planers, principally engine lathes from 24 to 72 in. swing, and planers of 40 to 72 in. width. About 150 additional workmen will be employed when the new plant is put in operation.

The Oliver Machinery Company, manufacturer of woodworking machinery, Grand Rapids, Mich., has opened a branch office in suite 400-423, Bank of Commerce Building, St. Louis, Mo., in charge of A. S. Kurkjian. This is the sixth branch office opened by the company and has been made necessary by the rapid increase in business in the past year. A complete assortment of the company's catalogues and other literature is carried in the new office, which is in position to take care of all inquiries promptly and satisfactorily.

The Wiley & Russell Combination Opening Die Machine

A new motor-driven machine has been brought out by the Wiley & Russell Mfg. Company, Greenfield, Mass. It is the maker's standard combination opening die bolt cutter, nut tapper, pipe threader and cutting-off machine equipped with quick change opening dies.

The motor used is a 2-hp. constant speed machine operated by either direct or alternating current and



The No. 55 Opening Die Bolt Cutter, Nut Tapper, Pipe Threader and Cutting-Off Machine with Electric Motor Drive Made by the Wiley & Russell Mfg. Company, Greenfield, Mass.

capable of being reversed or running continuously in one direction. A bracket is fitted and bolted to the bed on which the motor shelf is secured. The shelf is hinged at the back, and finished projecting lugs rest on the cam shaft operated by the lever A. In this way the proper belt tension can be secured at all times, and it can be slackened for shifting from one step to another of the cone pulley. When the belt has been sufficiently tightened, the cam shaft is locked by a binder. The lever B in front of the motor controls the clutch in the large spur gear at the left, so that the machine can be stopped without stopping the motor. Back gears are furnished and a raw hide driving pinion is used to transmit power. The motor drive is strongly and carefully fitted in place. The machine so equipped weighs 2300 lb. and is guaranteed to cut bolts and pipe having diameters of 2 in. or less.

A New Indianapolis Industrial Suburb.—Members of the Greater Indianapolis Industrial Association and various other commercial bodies of Indianapolis, Ind., are interested in a civic movement for the establishment of an industrial suburb west of the city, to be known as Mars Hill. Eight thousand building lots have been placed on sale by the organization, which will improve the property with sidewalks, gravel streets and sewers. A large tract of land has been reserved for factory sites, which will be donated to concerns outside of Indiana locating in the suburb. It is understood that the association already has under contract a number of manufacturing establishments, whose identity will not be made known at this time.

Shop Cost Accounting

Details of the New System Installed at the Plant of the Cincinnati Planer Company

That machine tool builders recognize the value of cost accounting is evident from the numerous systems in use at the present time. Many of these are open to the objection that to install them requires many changes in the shop and office methods of the plant, but that recently installed by Miller, Franklin & Stevenson, Boston, Mass., for the Cincinnati Planer Company, Oakley, Ohio, is said to be flexible and adaptable to the special difficulties encountered in every shop. The essential parts of the system are three in number and are a raw stock inventory sheet, a daily shortage report and a time card.

The raw stock inventory sheet, which is a 5 x 8 in. card, is kept by the stock clerk and supplies him with the necessary information for the daily shortage report. All of these cards are filed numerically by piece numbers. Referring to the card for planer table stock, which

RAW STOCK SHEET
The Cincinnati Planer Co.
Material Time . 3 weeks
Operation Time 4 Piece No. 2013
Total Time . . 7 weeks
Article Table - 30" wide Drg. No. 504
Remarks 8 ft. long 36x36" - 18 V's
Pattern at Modern Fdy. Max. 10
Location Yard Min. 3

Date 1911	Received	Issued	Order No.	Reserve for Req.	Reserved Issued	Balance	Shortage Report
1/1	Inventory					5	
1/3		2	184			3	36
1/10	1	4	188			0	41
1/15			195	2	1/18		
1/18	5	2	195			3	48

Fig. 1.—Raw Stock Inventory Sheet Used by the Cincinnati Planer Company, Oakley, Ohio.

is reproduced in Fig. 1, the heading, Material Time, represents the time required by the outside foundry to deliver the rough casting, and the Operation Time heading is the time necessary for getting this platen properly machined and delivered to the erectors. The remaining headings are self-explanatory, with the exception of those marked Maximum and Minimum, which indicate the maximum and minimum number of castings that should be carried on hand.

Following the system further, on January 1 the inventory showed five castings on hand, which the balance column indicates, and on January 3 two were issued on order No. 184, leaving a balance of three, and the notation 36 in the Shortage Report column refers to the shortage report of that number, that is furnished

the purchasing agent daily for his guidance in ordering material. On January 10 one casting was received from the foundry and four were issued on order No. 188, and the Balance column naturally shows none on hand. On January 15 order No. 195 called for two tables, and as none were on hand, notation was made in the Reserved for Requisition column. On January 18 five castings were received from the foundry and two were issued on order No. 195, and the stock clerk made note of this by inserting the date in the Reserve Issued column, thus as a check against the clock time of a workman, but its principal idea is to enable the cost clerk to calculate the exact operation cost of any particular part of a machine tool. These cards further show whether the premium time allowed on any job is either too liberal or the reverse, and affords a definite basis for a readjustment of premium rates. A time clerk makes the rounds of the shop every hour, personally inspecting the job being worked upon, and he is also able to determine within very narrow limits the exact amount of time

The Cincinnati Planer Co.

DAILY SHORTAGE REPORT ON RAW STOCK BOUGHT

№ 36

Date 1-13-11

Piece No.	Size	NAME	Amt. on Hand	Max.	Min.	Mat. Time Weeks	Other Time Weeks	Total Time Weeks	REMARKS
2013	30" wide	Table	3	10	3	3	4	7	

To Mr. Signed

Fig. 2.—The Daily Shortage Report on Raw Stock.

closing this memorandum transaction, and leaving three tables in the Balance column. The advantage of this is that it warns the stock clerk not to put away in stock the full number of parts received, but that he must at once deliver to the machining departments the quantities indicated in this column as being needed on orders previously issued, but held up because of lack of stock.

The daily shortage report on raw stock, shown in Fig. 2, is made up for the purchasing agent by the stock clerk

TIME CARD Week Ending 1-11-11 THE CINCINNATI PLANER CO.

Employee Jno. Smith Clock No. 90

Piece No. 2013 Order 84 Mch. 6 Quan. in Lot 10

Name of Piece Planer Table Pieces Completed 4

Operation Planing Mch. Tool No. 5

	MORNING FROM	MORNING TO	AFTERNOON FROM	AFTERNOON TO	OVERTIME FROM	OVERTIME TO	HOURS
Thur.							
Fri.							
Sat.							
Mon.							
Tues.							
Wed.							

Premium Allowed 14 hrs

Time Taken 12

Gain 2 hrs

Time Paid for 13

Amt. Wages Due

Remarks

Dept.

Fig. 3.—A Specimen Time Card.

when posting deliveries from stock to the inventory stock sheets described above, and the former is thus able to see at a glance exactly how stocks stand, as well as what is urgently needed, and the time it will require to get the part, or supplies, delivered; and in the case of the planer table cited, the average time it takes to machine the casting after it has been received. These reports ars printed on 8½ x 11 in. sheets and are bound in a loose leaf book in numerical order.

The time card illustrated in Fig. 3 is not only used being devoted to any particular job. At the commencement of every new operation a new time card is filled out by the time clerk, and the card for the previously completed job is turned into the cost department, thus enabling this department to figure the cost of any particular part immediately upon completion of the work.

Shipyard for Rio de Janeiro

Vice-Consul General Joseph J. Slechta forwards the following from Rio de Janeiro to the State Department:

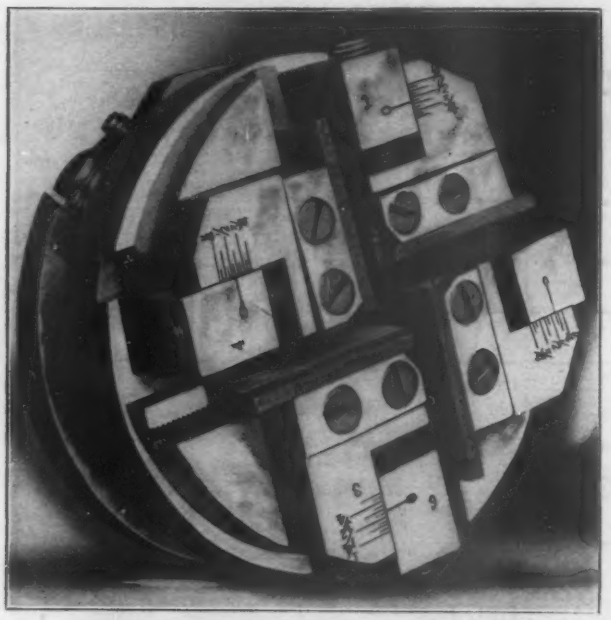
Contract has just been closed by the local representative of an important American manufacturing concern with the Lloyd Brazileiro, which maintains a line of Brazilian steamships plying between Brazil and New York and a very extensive Brazilian coastwise service, for machinery and other equipment for a ship repair yard amounting to about $500,000. This contract represents a successful effort to obtain for the United States one of the most important, if not actually the most important, single trade operation which has ever been effected by Americans in Brazil. The contract specifies explicitly that all of the material and machinery for equipment shall be of American manufacture.

The plant is to be fully equipped and ready for operation within one year. The present plans are that when the repair plant has been placed in good working order and workmen have become thoroughly familiar with the operation of the machinery a complete shipbuilding yard will be installed. It is understood that American manufacturers will have the preference in supplying the equipment for this plant as well.

The Consolidated Connellsville Coke Company, at a recent meeting of stockholders at Uniontown, Pa., voted to issue bonds to the sum of $750,000 for the purpose of liquidating individual mortgages and financing proposed improvements. Plans for the proposed new work have not been made public.

The Landis Solid Adjustable Die Head

A new type of die head, known as the solid adjustable die head, has been recently brought out by the Landis Machine Company, Waynesboro, Pa. In its design the maker has endeavored to embody the use of his long life, high speed, free cutting die, and at the same time secure a solid one having a very wide adjustment. The new head is intended to take the place of the solid type of die now used on screw machines where the work is



A New Type of Solid Adjustable Die Head Made by the Landis Machine Company, Waynesboro, Pa.

backed out of the die after the thread has been cut. The special advantages of this new head are that very high cutting speeds which are equal to the turning and the drilling speeds on the other operations of the screw machine are readily acquired. In this way the speed does not have to be reduced for the threading operations to accommodate the die, as frequently has to be done with solid dies. The chasers can be ground to suit the various kinds of material being cut. As any necessary amount of rake can be given, the best possible cutting condition and ideal results are said to be secured. Other advantages of this type of head are: A wide range of work can be accommodated, the ability to adjust any one chaser of a set independently of the others or replace it without replacing the complete set, and the fact that each grinding of the dies gives all the qualities of a new die.

The die head is held in the turret of any ordinary screw machine and trips by retarding the forward movement of the carriage. The tripping arrangement is such that when the desired length of thread has been cut, the die head will trip and revolve with the work until the machine has time to reverse. If desired the die head can be supplied without the tripping device to meet the requirements of special cases.

The dies are made from high speed steel and can be ground and reground many times, which gives a very long life, while at the same time it is never necessary to anneal, hob or retemper them. The dies are adjusted to and from the center on radial lines for work of different diameters and are rigidly held in their seats. In addition an adjustment to compensate for wear is also provided.

If desired one set of chasers can be readily set above or below its rated diameter, as, for example, a ½-in. chaser can be set to cut work having diameters varying from ¼ to 1 in. if desired. While the angle of the thread will not be ideal, it is sufficiently accurate for ordinary screw machine work. A special set of chasers is ordinarily required whenever a pitch other than the standard is cut, but with the Landis head any diameter within its range can be cut with one set of dies so long as the pitch is the same. Where absolutely correct pitch is required, special holders to set the chasers on the angle corresponding exactly with that of the thread should be used, but ordinarily this is not required.

Two sizes of head are regularly made. The following table gives the principal dimensions:

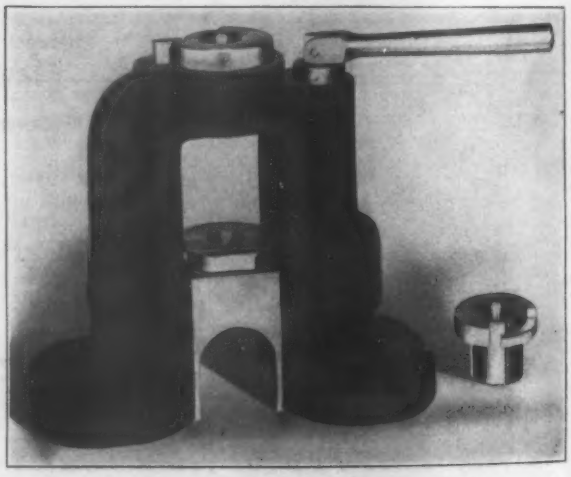
	No. ½.	No. 1.
Range of head, inches	⅛ to ½	¼ to 1
Diameter of head, inches	$2^{15}/_{16}$	4⅝
Length of head, inches	$1^{15}/_{16}$	3⅛
Length of shank, inches	$2^{1}/_{16}$	$4^{11}/_{16}$
Diameter of shank, inches	⅞	1¼
Length of thread, inches	1½	2½

The larger of the two heads is the one illustrated, and sizes with special lengths and diameters of shanks can also be supplied.

Wood & Spencer Reaming and Drilling Jig

A new jig designed for high speed boring, drilling and reaming has been brought out by the Wood & Spencer Company, Cleveland, Ohio. This tool has been designated as a standard reaming and drilling jig, as it can be used on a wide range of work. It is said to be especially adapted for handling parts in large quantities on account of the quick action of its mechanism and the ease with which work can be placed and released.

The construction of the jig is very simple, and its operation is equally so, a lever and worm gear being employed to operate the gripping mechanism. A quarter turn of the lever will fasten or release the average piece. The tool will take the place of many special jigs which cannot be used after the work for which they were de-



The Standard Boring, Drilling and Reaming Jig Made by the Wood & Spencer Company, Cleveland, Ohio.

signed is finished. The construction of the tool is strong, all wearing parts being hardened and ground, and it is designed to stand the severest strain of drilling without loosening. Eight sizes of jig, ranging from ½ to 2 in. in capacity, are made and the weight is 30 lb.

The Bessemer Limestone Company, Youngstown, Ohio, manufacturer of paving brick and owner of extensive limestone quarries, has made some changes in its organization. The position of chairman of the board of directors was created, and J. G. Butler, Jr., was elected to that office, retiring from the presidency after a service of 24 years. The resignations of C. S. Crook as treasurer and C. M. Crook as general manager were accepted. John Tod was elected president; C. C. Blair, general manager, and John A. Rowland, secretary and treasurer.

Fires have been lighted at the new by-product coke ovens at the Gary Works of the Indiana Steel Company, subsidiary of the United States Steel Corporation, for the purpose of drying out the bricks, and it is expected that 70 of the 560 ovens will be in active operation within the next two or three weeks.

The Machinery Markets

The machinery markets in all sections seem to be gradually and conservatively strengthening. Reports from a number of sources indicate that orders taken during February exceeded those of January, and in many sections a better business was done than at any time since the summer of 1910. The decisions of the Interstate Commerce Commission against the proposed advances of railroad freight rates have not affected the railroad demand for machinery, but, on the contrary, inquiries from the carrying companies have increased. In New England the Boston & Maine Railroad is reported to be about ready to issue a list for its Concord shops, and a list of tools is out in Cincinnati calling for 22 machine tools to be delivered to the Carolina & Northwestern Railroad. The railroads are buying single tools for replacement in the East, and machinery houses in New York are bidding on two large lists issued early in the month. Chicago machinery houses are encouraged by the news that the railroads in the Southwest are letting building contracts for shop extensions, and a list is out in that market from the Santa Fe Railroad for shops at Sweetwater, Texas. A good single tool business is being done in Philadelphia, and there is an excellent call for woodworking machinery in Baltimore. Trade is good in Cleveland. A heavy increase in the volume of business is reported from the South, where development of coal properties and water works is affording an outlet for power equipment and contractors' machinery. An encouraging building movement is on in Oregon and the call for metal working tools there has increased noticeably.

New York

NEW YORK, March 1, 1911.

Several machinery selling houses in New York booked more orders in February than in any month since March of 1910. A marked feature of the month's transactions was that buyers followed their inquiries very closely with orders and a number of lists against which buying had been deferred for several weeks were closed out. During the last week new inquiries have fallen off slightly, but, all things considered, the outlook is entirely satisfactory, as most houses were kept busy filling orders placed against specifications sent out earlier in the month. Inquiries for power equipment have increased of late, and manufacturers and selling agents who handle heavy power machinery are bidding against specifications for power house material required for trolley extensions. Considerable trolley extension work has been planned in New Jersey and Pennsylvania for the coming spring, and builders of power equipment, who a short time ago were cutting prices in order to get work enough to keep their shops busy, have stiffened their terms, as there seems to be enough business in sight to go around. The railroads continue to inquire for mechanical equipment for replacement, and from the way specifications are coming out it does not appear that the recent decision of the Interstate Commerce Commission prohibiting the raising of freight rates will result in any curtailment of railroad expenditures. Machinery men who are close to the railroad situation are informed by men in charge of the mechanical departments of Eastern railroads that they have received no orders to cut down their 1911 budget.

An Industrial Training School List

Bids will be received March 9 by the Board of Education of Jersey City, N. J., for a line of shop equipment to be delivered to Public School No. 2 in that city. The list calls for a general line of mechanical equipment used in manual training, in addition to mill supplies, such as belts, pulleys, shafting, machine guards, &c. Included in the machinery requirements are eight engine lathes, all with a 12-in. swing, six with a 4-ft. bed and two with a 5-ft. bed; one lathe with a 14-in. swing and 6-ft. bed, fitted with power cross feed, belt and gear feed, tapping attachments, &c.; two hand lathes, 12-in. swing, 4-ft. bed; one 24 x 24 in. planer, one shaper, one 20-in. drill press, one milling machine, one universal grinder, one power hack saw, one universal saw bench, one 14-in. cut-off saw, one 14-in. rip saw, eight belt driven wood turning speed lathes, to turn 24 in. between centers; two belt driven speed lathes, 60-in. bed, to turn 36 in. between centers; one band sawing machine, one hand planer and jointer. A quantity of chucks, drill chucks and considerable electrical equipment is also required. Specifications for the equipment can be secured from John T. Rowland, Jr., 15 Exchange place, Jersey City, who is the supervising architect, or the secretary of the Board of Education at the City Hall.

Hazen & Whipple, consulting engineers of 103 Park avenue, New York, have inquiries out for a line of equipment for a sand filtration plant and pumping plant to be installed at Ogdensburg, N. Y. The requirements include steam and electric pumping machinery, water turbine, electrical equipment, boilers and other appurtenances. Copies of specifications can be obtained from the consulting engineers or from the office of the Board of Water Commissioners at Ogdensburg.

The Defender Photo Supply Company, Rochester, N. Y., has in course of construction an addition to its power plant and has plans under way for an extensive factory addition for the manufacture of dry plates.

Walter E. Sexton, Mineola, has completed plans for the town of Westbury, L. I., for the construction of a system of water works to cost $60,000.

Payne Brothers, Inc., 275 Emmet street, Newark, N. J., will erect two steel buildings, one 39 x 432 ft., and another, 50 x 160 ft., as an addition to their steel fabricating plant at that address.

The Public Service Corporation of New Jersey, whose main offices are at Newark, is arranging to build a car house at Hilton, N. J., a part of which will be given over to a machine shop for making temporary repairs to its rolling stock. The shops and car house will be one story and will be 50 x 302 ft.

The City Council of Madison, N. J., will expend $16,678 for additional equipment for the municipal electric light plant.

Bridgeton, N. J., will receive bids until March 7 for the construction of a disposal works and pumping station. C. B. Jones is city clerk.

The Wagener Shoe Company, Penn Yann, N. Y., will erect an addition to its plant, doubling the size of the present building. Considerable new machinery and equipment will be required.

The Newcomb Carbureter Company, Harrison, N. Y., has been incorporated with a capital stock of $100,000, to manufacture carbureters, gas engines, &c. The incorporators are Edward C. Newcomb, North Scituate, Mass.; Geo. F. Chamberlin, Harrison, N. Y., and Edwin C. Chamberlin, 4 West Eighty-fourth street, New York City.

Plans for a power house to be erected for the city of Buffalo, N. Y., in connection with the new Technical High School and a grammar school adjoining, at Bennett Park, Eagle and Clinton streets, are being prepared by Architects Miller and North, 1003 Mutual Life Building, Buffalo.

The J. W. Storandt Mfg. Company, 322-324 St. Paul street, Rochester, N. Y., manufacturer of show cases and store fixtures, is to build a new factory, 122 x 318 ft., one story, saw-tooth roof, on Lyell avenue. Bids are now being received.

The equipment for the new water works pumping station at the foot of Porter avenue, Buffalo, N. Y., to be purchased by the Commission of Public Works, will include five 30,000,000-gal. triple expansion pumps, eight 750-hp. water-tube boilers and steam mains, with feed pumps and coal and ash handling machinery, and an electric overhead crane.

The Keith Paper Company, Lockport, N. Y., is planning the erection of a paper manufacturing plant on the Niagara River, near North Tonawanda, N. Y. Charles Upson is manager.

The plant of the Brown & Kearney Company, Warsaw, N. Y., manufacturer of wood advertising novelties, is to be moved to Silver Springs, N. Y. About a year ago the company purchased the factory of the Silver Springs Mfg. Company, which it has since been operating, in connection with the Warsaw plant. The business of the company will now be consolidated at Silver Springs.

The Beebe Electric Railway System, Syracuse, N. Y.,

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will install an additional stationary transformer of 600-hp. capacity in the Brockport substation of the Buffalo, Lockport & Rochester Railway to "step down" the high tension Niagara Falls power current to the lower voltage used for electric railway operation.

The Slater Weather Strip Company, Buffalo, N. Y., has been incorporated and will establish a plant for the manufacture of metallic weather strip. The incorporators include J. J. and H. L. Slater and D. J. Ward, all of Buffalo.

The J. M. Jones Sons Car Company, Watervliet, N. Y., is planning to erect an addition to its plant, necessitated by contracts for forward delivery recently received.

The business and plant of the Morris Machine Works, Baldwinsville, N. Y., has been taken over by the Valley Iron Works of Williamsport, Pa., and will be removed to the latter place, where space has been provided by an addition recently completed. The absorbed company's specialty was the manufacture of the Hendershot patent compression shaft coupling.

The Ridgeway Lime & Sulphur Company, Medina, N. Y., will shortly commence construction of a factory for the manufacture of spraying material and apparatus. John Crowley is president of the company.

The Niagara Radiator & Boiler Works, North Tonawanda, N. Y., E. C. Andrews, president and general manager, has awarded contracts for extensive additions to its plant at Oliver street, Ninth avenue and the Erie Railroad, which will double its present capacity. Eight new buildings will be erected at a cost of about $100,000. An additional 96-in. cupola and new blowers will be installed; also several thousand feet of electric overhead carrier track, with necessary carriers and cranes. Later on further equipment of grinding and polishing machinery will be provided.

F. T. Elwood, Commissioner of Public Works, Rochester, N. Y., is receiving bids for a refuse incinerating plant to be constructed by the city on Falls street, at an estimated cost of $100,000.

The Livingston-Niagara Power Company, Mt. Morris, N. Y., will build an electric power transformer station, 30 x 40 ft., 35 ft. high, at Golah, N. Y. Contract for construction has been given to the Alexander Shumway & Uts Company, Rochester, N. Y.

Chicago

CHICAGO, ILL., February 28, 1911.

The Chicago machinery market is brighter this week. Some of the numerous inquiries that have been hanging fire for the past month have been closed. Most business has emanated from farm machinery manufacturers, though some little railroad orders have been sold. The demand from automobile interests is decidedly quieter than last year at this time. Building contracts let by railroads in the Southwest are encouraging, and the activity particularly in Texas, where the Santa Fe Railroad has ordered extensive shop improvements, has lent a stronger tone to the market.

The Witherspoon-Engler Company, Monadnock Block, Chicago, has been awarded contracts by the Santa Fe for the construction at Sweetwater, Texas, of the following buildings: Woodworking machinery and carpenter shop, 40 x 100 ft., one story; open air repair shed for freight cars, 59 x 307 ft., one story; engine supply building, 40 x 80 ft.; hose house, 10 x 12 ft.; machine shop, 60 x 100 ft., two stories; lavatory building, 26 x 54 ft., two stories; roundhouse, 18 stalls, 92 x 464 ft., with 85-ft. turntable pit; blacksmith shop, 45 x 63 ft.; storehouse, 62 x 100 ft., two stories and basement; power house, 60 x 75 ft., two stories, and coal pockets and trestle. The company also has been awarded contracts by the same road for construction of the following buildings at Slaton Junction: Concrete oil reservoir, 15,000 gal.; engine and supply building, 40 x 80 ft.; hose house, 10 x 12 ft.; machine and blacksmith shop, 60 x 100 ft., two stories; lavatory building, 26 x 59 ft., two stories; roundhouse, 12 stalls, 92 x 312 ft, with 85-ft. turntable pit; power house, 36 x 72 ft., including coal pocket and trestle work. Contracts for all material to be used in construction of the buildings have been let by the Witherspoon-Engler Company, and the equipment will be purchased by the Santa Fe. It is also understood that this road is preparing to make improvements to its Cleburne, Texas, shops at a cost of about $75,000. These improvements will consist of a new power house containing six 300-hp. boilers, dry kiln, 90-in. motor driving wheel lathe, autogenous welding plant and other new machines.

The Maple City Mfg. Company, Monmouth, Ill., manufacturer of oilers and sheet metal goods, incorporated in 1907 with $30,000, has been reincorporated with $150,000 capital stock, and has purchased the building in which it is located, the dimensions of which are 114 x 277 ft., four stories. Under the new organization the same officers will be in charge.

William R. Perrin & Co., Chicago, has leased a foundry at Sycamore, Ill., into which it is moving its equipment from its Chicago plant.

The Northwestern Can Company, Chicago, which recently closed a contract with Brazil, Ind., for the removal of its plant to that city, will commence at once the erection of buildings to contain 60,000 sq. ft. of floor space.

The Celfor Tool Company, Railway Exchange Building, Chicago, has under consideration the erection of a factory building at Buchanan, Mich., plans for which have not been prepared.

Sargent & Lundy, consulting engineers, Railway Exchange Building, Chicago, have preliminary plans in progress for the construction at Louisville, Ky., of a central light, heat and power plant at a cost of $1,000,000, for the Kentucky Electric Company. Equipment will be purchased by the owners, and it is understood that no orders have been placed.

The Chicago Bearing Metal Company, Chicago, has increased its capital stock from $250,000 to $500,000.

The Metropolis Foundry Company, Metropolis, Ill., recently incorporated with $3500 capital stock, has taken over an existing plant, which it expects to enlarge in the near future.

The Western Electric Company, Hawthorne, Ill., has plans prepared for the construction of two manufacturing buildings, the total dimensions of which are 100 x 300 ft. Contracts for the structural steel have been let, but the actual work of construction has not been started.

The Illinois Valley Gas & Electric Company, Streator, Ill., has purchased property upon which it is considering the erection of a power house. Sargent & Lundy, Railway Exchange Building, Chicago, are the consulting engineers.

The Atlas Tool & Implement Works, Rock Island, Ill., incorporated with $150,000 capital stock, has taken over an existing plant which is thoroughly equipped, and will, therefore, not be in the market at the present time for material or equipment.

The E. A. Preuss Company, La Salle, Ill., has been incorporated with a capital stock of $6000. The incorporators are Arthur E. Preuss, Geo. A. Wilson, Jr., and Thos. F. Doyle. The company will engage in manufacturing builders' and manufacturers' supplies.

The Savill-Chandler Company, Canton, Ill., has changed its name to the Canton Foundry & Heating Company, and increased its capital stock from $40,000 to $150,000.

The Johnson-Bore Switch-Throw Company, Decatur, Ill., has increased its capital stock from $40,000 to $200,000.

The city of Wheaton, Ill., will receive bids until March 6 for one 60-hp. gas engine, gas producer and pump. Louis Ellsworth is city clerk.

Philadelphia

PHILADELPHIA, PA., February 27, 1911.

February has, in some instances, proved to be a better month for orders than January, but even at that manufacturers have not booked new business in sufficient quantity to influence very greatly the recent productive rate. With general demand light, it is difficult to measure changes with any degree of certainty in the machine tool business from week to week and under conditions which have recently prevailed. The receipt of one or more fair sized orders is likely to show quite a variation in instances in the monthly percentage basis of the business transacted, which does not represent, however, the average condition in the trade. Developments during the closing week of the month have been unimportant. About the usual run of small lot business has been transacted by merchants. In several instances sales covering a number of tools for small shop equipment have been reported but there has been no fresh demand from any of the customary buyers in larger quantities. No further inquiries from the railroads in this territory have been reported, but the trade looks forward to better conditions. The freight rate decisions, while adverse to the railroads, will, it is believed, have but a temporary unfavorable influence on the business situation. The general improvement in the iron and steel trades is believed to be genuine and buying will continue to improve. In the second-hand machinery field a fair amount of business is under negotiation, but sales have not increased to any marked extent. A moderate demand for power equipment is reported, boiler shops have been quite active and sales of engines of moderate capacity have been a trifle better. The situation in the foundry trade shows little change; a little better demand for steel castings is reported, while some jobbing foundries are a shade more active.

Fire partially destroyed the copper, brass and iron working plant of George F. Ott, 207-213 Buttonwood street, on February 21. The damage was not serious and the plant was in partial operation within the week. The principal

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damage to the machine shop was in the burning out of the motors, which have been replaced. In a short time the plant is expected to again be in full operation.

The John B. Stetson Company is preparing to build further additions to its plant at Germantown and Montgomery avenues. An eight-story addition, 50 x 81 ft., and a six-story addition, 44 x 98 ft., are proposed. Plans are by the company engineers.

The Department of Wharves, Docks and Ferries, city of Philadelphia, will receive bids until March 6 for furnishing, under schedule A, one deck and coal scow, and under schedule B one stiff leg derrick, to be erected on one of the department deck scows. Specifications may be obtained at the office of the acting director, Joseph F. Hasskarl, 555 Bourse Building.

The Reading Crane & Hoist Company, Reading, Pa., reports inquiries very good, that it has a very satisfactory amount of business on its order books and, while business in hand is not yet up to the capacity of the plant, it has been able to keep its full quota of employees engaged. This company is building two special double I-beam hand power traveling cranes for the United States Government, for use in the Bureau of Standards, which will be fitted with interchangeable parts so that they may be used either as of 4, 6 or 10 tons capacity.

The R. S. Newbold & Son Company, Norristown, Pa., considers the outlook for business decidedly better. The machine and boiler shop departments are both very busy, and while there has been a little improvement in the foundry, the improvement in that department has not been so noticeable. Orders coming in are not very large, as a rule, but in the aggregate are sufficient to keep it going fairly well and a steady increase in business is anticipated.

The Hilles & Jones Company, Wilmington, Del., advises us that its rate of production has increased materially over that of several months ago and the prospect for the future is considered favorable. Among recent shipments are punches, shears and coping machines for new structural steel shops in Baltimore, Md., and Omaha, Neb., these tools being designed for handling Bethlehem as well as standard sections.

The Light Mfg. & Foundry Company, Pottstown, Pa., is operating at pretty close to full capacity, although business generally is still considerably below that at this time a year ago. Several very satisfactory orders have, however, been recently booked, and it is believed that the demand will gradually expand, particularly during the next few months.

The Wilbraham-Green Blower Company, Pottstown, Pa., has been fairly busy for the last three months, but orders have been confined to small lots and of a varied character. New business is still inclined to drag and, while a betterment is looked for, a doubt is expressed that normal conditions in its lines will hardly be reached in the very near future.

Alfred Box & Co., Philadelphia, Pa., have appointed the Central Foundry Supply Company, Columbus, Ohio, its Western selling agent for the Box electric and hand power cranes and hoists.

New England

BOSTON, MASS., February, 28, 1911.

The machinery market has shown little change since last week. The news that the Boston & Maine will soon have out a list of machinery for its Concord shops, a list probably considerably larger than that for the Lyndonville, Vt., shops, will be received with pleasure. The dealers state that other good business is in sight. The Government shops of New England get no great amount of money under the Civil Appropriation bill. Watertown Arsenal is down for $17,000 for completing its power plant, $10,000 for an oil burning system and $15,000 for a testing machine. The Springfield Armory receives $18,300. The wire business continues good, though the copper market has affected the demand for copper and alloy lines. Business men everywhere are discussing the railroad rate case decision in its effects upon business, the common opinion being that no permanently serious results will follow, though the fear is expressed that some of the railroads will still further postpone needed improvements.

The Boston iron and steel merchants report business slow. January showed a marked decrease over the same month of 1910, and while February may show some improvement, it will probably be disappointing. One of the chief complaints is difficulty in making collections. Even some buyers who have been accustomed to do a spot cash business are permitting some little time to elapse before payment, and that class of trade which requires to be carried is waiting, on the average, beyond its normal time of settlement. Customers are buying from hand to mouth, in the belief, according to the jobbers, that they have nothing to lose by so doing, and prefer to conserve their cash resources for the present. The stocks of consumers are very low, however, and consequently the demand must be heavy with the resumption of more active trade.

The Boston & Maine Railroad has decided to erect large addition to its repair shop at Concord, N. H., and the engineers are now working on the plans. Details are not yet available, but the officials state that a very good sized list of machine tools will be given to the trade in the near future. The matter of the big shops, to cost $2,500,000, is not yet decided, the new site not having been selected to date.

The Waterbury Crucible Company, Waterbury, Conn., manufacturer of crucibles, is going out of business and its plant is for sale. The purpose is to move the business to Detroit, Mich., but the arrangements are not yet completed. Edgar B. Seidell, the practical man of the business, will move to Philadelphia as soon as the company's affairs have been fixed up, and proposes to take a considerable rest after 35 years in the crucible business.

The stockholders of the Chapman Mfg. Company, Indian Orchard, Mass., are considering a plan proposed by a committee of their number for a financial reorganization of the business, which includes the creation of a new corporation of similar name which would take over the entire stock and business of the present company. The proposition includes increasing the preferred stock from $300,000 to $500,000, but also the decreasing of the common stock from $1,000,000 to $500,000. The action is taken at the instance of President Adolph W. Gilbert. The consummation of the plan will place the business on a more advantageous basis.

Two great power projects have been authorized by act of the Vermont Legislature. One is that of a syndicate consisting of L. B. Dow, Boston; John E. Reynolds, New York, and Fred C. Davis, Springfield, Vt., who have acquired a large tract of land on Mill River, in the town of Clarendon, which will be developed as an electro-hydraulic plant, with an estimated capacity of 4000 hp. The Clarendon Power Company has been organized. One dam and one of two power plants will be built in the spring. The other charter provides for the incorporation of the Fifteen Mile Power Company, which proposes to erect a dam across the Connecticut River in the town of Norton, flow 4000 acres of land and create, it is stated, 40,000 hp.

The railroad facilities of New England will be increased by the carrying out of the plans of the New York, New Haven & Hartford Railroad in connection with its purchase of control, with the New York Central system, of the Rutland Railroad. By the building of a link 10 miles long in the Boston & Maine system, between South Vernon and Brattleboro, Vt., the road secures its own line to Montreal. It is believed that Boston shippers and others will be benefited by this shorter and quicker haul.

The second annual exhibition of aerial craft, which was held in Mechanics' Building, Boston, last week, demonstrated most forcibly the progress of aviation as a factor of industry. Many of the well-known American companies were represented by exhibits, most of them by fully equipped machines, and a considerable number of new concerns showed their projected heavier than air craft, or parts or accessories. Even the toy aeroplane was well represented as an established business, most interesting being the standardized parts for the use of amateurs who have taken up the hobby of designing and building models. From the New England point of view the most important exhibit was that of the Burgess Company & Curtis, Marblehead, Mass., which has established works that promise to assume still greater proportions. The Metz Company, Waltham, Mass., showed a new machine and a rotary type gasoline engine. This concern, which builds automobiles, has taken up the aeroplane in a serious way and will extend its works to provide for the new department. Other exhibits by companies not yet very well known in this field were those of the Cameron Car Company, Beverly, Mass.; Sinnott & Swinton, Reading, Mass.; Gillstrom & Johnson, Hartford, Conn.; G. G. Hubbard, Ipswich, Mass.; the J. Pollinger Aeroplane Mfg. Company, Chelsea, Mass.; Saunders & Butler, 341 Newbury street, Boston, Mass.; Boston Aeronautical Mfg. Company, 131 Coleridge street, East Boston; Harriman Aeromobile Company, 53 State street, Boston, and the International Airship Company, 50 Congress street, Boston. The Hendee Mfg. Company, Springfield, Mass., showed its new aeroplane engine. The standard types of flying machines were well represented. A feature of the show was the various makes of rotary combustion engines, in which a great interest was shown.

The General Mfg. Company, Waterbury, Conn., manufacturer of special rivets, screws, studs, steel balls for tumbling work, &c., has increased its capital stock to meet the demands of the growing business for new equipment, which has been purchased and installed.

The Wire Novelty Mfg. Company, West Haven, Conn., manufacturer of clothing buckles, tinners' trimmings and specialties, will erect two additions to its factory, one 46 x 64 ft. for an automatic machinery room, the other 26 x 37 ft. for the finishing department. The machinery and equipment is contracted for, the company states.

THE MACHINERY MARKETS

The Connecticut Bed Spring Company, Waterbury, Conn., has been incorporated under Connecticut laws, with capital stock of $10,000, of which $2500 has been paid in. Charles Walzer is the president and treasurer and Benjamin Bernstein secretary. The factory will be located in Waterbury.

The Columbia Carriage & Rattan Company, Fitchburg, Mass., is equipping a factory for the manufacture of high grade children's carriages, and proposes to create a business of large size, the available floor space permitting of the employment of 300 hands. The office is at the corner of Water and Newton streets.

The Bradford Dyers' Association, Bradford, Yorkshire, England, has acquired some 800 acres of land between Niantic and Westerly, R. I., and proposes to erect a large plant and create a model factory village on the premises, at a reported cost of $1,000,000. An important water power is included in the land holdings of the Syndicate, which will be developed for power. A storage reservoir will be established.

The United Drug Company, Boston, Mass., has selected Kansas City as the site of a new Western plant, and states that it will erect a building containing approximately 144,000 sq. ft., five stories and basement, either of brick, steel and concrete, or of mill construction, more probably the latter. The company assumes that the building will cost about $240,000 and its equipment $150,000.

The Richard French Iron Works, Worcester, Mass., manufacturer of structural and ornamental steel and iron work, has awarded the contract for a forge shop 36 x 94 ft.

J. L. Brackett & Co., Portland, Maine, box manufacturers, whose large plant was destroyed a week ago, state that they will not rebuild immediately.

Cleveland

CLEVELAND, OHIO, February 28, 1911.

Business in the local machine tool market shows practically no change. Dealers are getting a fair volume of single tool orders and inquiries, but there still is a noticeable absence of inquiries of any size. Large manufacturing concerns as a rule are refraining from coming into the market, practically all of the business being from small manufacturing plants and repair shops. There is about as much inquiry for second-hand as for new tools, second-hand lathes being particularly in demand. The decision of the Interstate Commerce Commission refusing to allow increases in freight rates will, it is expected, have the effect of holding back some prospective business, particularly from the railroads. In addition to machine tool equipment inquiries are pending from several railroads for coal and ore handling plants, and manufacturers of this class of equipment fear that these orders may be held up for a time, although they do not believe that the purchases of plants that are needed will be deferred an indefinite length of time.

The Bryant Heater & Mfg. Company, Cleveland, has been incorporated with a capital stock of $50,000 by Charles L. Bryant, Otto Fix, B. A. Hendricksen, Guy M. Lee and Albert C. Orth. The company will succeed to the business of the Natural Gas Regulator Company, which has a plant at 978 East Sixty-fourth street, the new name being more representative of the company's present line of products, which are mostly water heating goods in all kinds and radiators. Charles L. Bryant is president and G. M. Lee secretary.

The Colonial Ice Company, Cleveland, will build a new artificial ice manufacturing plant with a daily capacity of 85 tons. The contract for the equipment has been awarded to the Great Lakes Engineering Works of Detroit.

The National Metal Reduction Company, Cleveland, has been incorporated with a capital stock of $10,000 by A. D. Levy, Max Stotter, S. M. Ploe and others.

It is announced that the Chesapeake & Ohio Railroad has decided to go ahead with the improvements outlined for that road and its subsidiary, the Hocking Valley Railroad, several months ago. The plan contemplates the construction of a new concrete dock in Toledo, Ohio, enlargement of the terminal facilities and yards in Toledo and double tracking the road between Toledo and Columbus.

The plant of the Bonnot Company, Louisville, Ohio, was destroyed by fire February 22, the loss being about $25,000. This plant was used for the manufacture of warm air furnaces. The company makes its other products at Canton, Ohio, where its headquarters are located. No action has been taken as yet regarding the rebuilding of the plant.

The Canton Rubber Company, Canton, Ohio, of which R. D. Bradley is president, announces that it will soon begin the erection of a new plant. A site has recently been purchased on Marion street adjoining the Pennsylvania Railroad. A three or four story building will be erected, about 50 x 250 ft. The capital stock will be increased from $24,000 to $200,000.

The General Fire Extinguisher Company, Providence, R. I., which is erecting an addition, 150 x 350 ft., to its plant at Warren, Ohio, to be used for enlarging its pipe cutting and storage departments, will install 10 new pipe threading machines, two cutting-off machines, a 5-ton crane with 25-ft. lift, a 60-ft. electric traveling crane, and about 30 individual motors for driving the old and new pipe threading machines.

The question of securing a satisfactory water supply which has been the cause of a long drawn out controversy in Akron, Ohio, has been solved by the reaching of an agreement by the city and the Akron Water Works Company, according to the terms of which the latter agrees to install a water purification system within 90 days.

New light, power and water plants are planned in North Brewster, Ohio, by the North Brewster Electric Light, Heat & Power Company and the North Brewster Water Supply Company, which were recently organized.

The business of the Lewis Welding & Mfg. Company, Toledo, Ohio, has been incorporated with $10,000 capital stock. The business has been established about a year. The company makes a specialty of valves for automobiles, stationary and marine motors, and does a general electrical welding business. No improvements are contemplated at the present time, but the company states that it is increasing its equipment from time to time to take care of its increasing business.

Detroit

DETROIT, MICH., February 27, 1911.

A somewhat peculiar condition exists in this city in the automobile and auto accessories trade. While the former are commenting on the general healthy condition, in fact, excellent, of the motor car industry, the latter are complaining of a very noticeable slump. One city salesman explains the situation as being the natural result of an oversupply of last year's products by the motor car men, and the effort to use this material in 1911 models, which in several cases are practically the same and in one case exactly identical with last year's model. While the manufacturers of the motor cars report excellent sales, these sales are not in Detroit, but to outside agents. Eight salesmen for one concern of this city report the disposal of one lone car between them in this city for January.

The Huron Motor Car Company of this city has filed articles of incorporation with the Secretary of State at Lansing. It is a new addition to this city's automobile colony, and starts operations with a capital stock of $50,000. The company's products will constitute gas engines and gas engine parts, as well as motor cars.

The new Studebaker corporation, recently organized, will combine the interests of the E. M. F. plant of this city and the Studebaker plant at South Bend, Ind. Clement Studebaker, Jr., states that the new company will erect at Detroit the largest automobile plant in the world.

The Buhl Malleable Company, along with other improvements, will erect a large new annealing room adjoining the main factory.

The John Scott & Co., recently organized, will erect a big ice making plant at Hastings and Trombly avenues. The plant will be one of the largest in the State.

The Chicago Pneumatic Tool Company is engaged in several improvements to its Detroit plant. A subsidiary machine shop, adjoining the main factory, is one of the items.

A new generator house will be erected by the Detroit & Suburban Gas Company. The structure will be a two-story steel frame building.

The Arctic Ice Cream Company has let the contract for a one-story factory at Sycamore and Grand River. The plant will cost around $12,000.

The Grand Rapids Upholstering Company has the plans completed for the construction of a branch factory at Cadillac, Mich., to manufacture a fireless cooker as a side line. This product has become so important a feature as to justify considerable development.

The Kawneer Mfg. Company, Niles, Mich., originally manufacturer of store fronts and barbers' fixtures, is branching out in other lines. Its growing trade has made necessary the erection of a new factory, 60 x 365 ft. This will give a total floor space of 66,300 sq. ft.

The Brooks Aeroplane Company, lately organized at Saginaw, Mich., has filed articles of incorporation with the Secretary of State. The company will deal in aeroplanes and accessories. C. C. Brooks has the management of the new company in hand.

The Iosco Turpentine Company, Iosco, Mich., will begin work on its plant within the next 60 days. The company is organized under the laws of Ohio, with a capital stock of $250,000, and will install apparatus to make the finished

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product. The company will commence operations with a battery of six retorts, which will shortly be increased to 36.

The Bainton Electric Steel Company, Buchanan, Mich., capitalized at $150,000, is preparing the plans for the erection of a plant.

C. A. Freeland will rebuild his tank factory at Sturgis, Mich., on the site of the one recently burned. The new factory will be of frame construction, covered with steel. The foundry department will be doubled in size and will be separate from the main building.

On account of the rapid advance of the Korf Mfg. Company, the stockholders have decided that the erection of a new factory is an absolute necessity. The new plant is to be practically double the size of the present one.

The W. A. Forbes Company of Caro, Mich., has reorganized and incorporated to manufacture sash doors, with a capital stock of $10,000. The old plant will be enlarged and several improvements made.

The L'Anse Bay Lumber Company, L'Anse, Mich., was organized last week, with a capital stock of $250,000, and articles of incorporation filed with the Secretary of State. The company will erect a modern double band saw mill on the site of the one which was burned several years ago. The new mill will have a capacity of 75,000 ft. per day. A lathe and shingle mill, as well as a planing mill, will be run in connection with the main plant.

Harrison, Clare county, will vote at a special election this spring on the question of bonding the city for the construction of a municipal water works and electric lighting plant.

Hillsdale, Mich., is planning to spend $10,000 for improvements to its lighting plant. The matter is in the hands of the Business Men's Association.

The Fox & Mason Furniture Company, Corunna, Mich., has taken over the plant of the Corunna Furniture Company. The new concern is incorporated, with $260,000 capital stock, and will combine and remodel the two plants.

The Champion Brewing Company of this city will build a new fireproof engine house and condensing room. The old engine will be replaced by a new.

City Commissioners of Ypsilanti, Mich., are planning numerous improvements. In addition to a new generator for the lighting plant, it is proposed to completely change the lighting system. George G. Scott is chairman of the committee.

The Handy Things Company, Ludington, Mich., suffered a bad loss February 20, when the old turning department was completely destroyed by fire. The loss is estimated at $60,000, with insurance at $35,000. It is not known whether the turning plant will be rebuilt.

A new stock organization, to be known as the Michigan Glass Company, Saginaw, Mich., with a capital stock of $50,000, was incorporated last week. The plant, construction on which will begin at once, will turn out glass bottles and other glass products. F. C. Simon has been made secretary and general manager.

The Newago Engineering Company, Newago, Mich., has started the construction on a two-story factory, to care for its fast increasing business. The Henry Rowe Mfg. Company of the same city is planning similar action. The above concerns formerly occupied jointly the plant of the Newago Chair Company, which will now occupy the entire structure. This will bring considerable new machinery to the little town of Newago.

Ground will be broken within a short time for the erection of a large addition to the plant of the Kellogg Toasted Cornflake Company, Battle Creek, Mich. The new building will be of brick and reinforced concrete, 63 x 150 ft., five stories.

The Acheson Oildag Company, Port Huron, Mich., is being crowded out of its present plant, and in view of this fact will build a new factory late this spring.

Hastings, Mich., is looking forward to the construction of a water power lighting plant. A committee, with C. H. Barber as chairman, has visited several plants in the State, and recommends a $125,000 structure.

The Grand Rapids Textile Machinery Company filed articles of incorporations at Lansing this week. The company has a capital stock of $30,000 and will manufacture a patent folding machine for handling fabrics in textile mills.

Another new Grand Rapids concern is the Oswald Motor Car & Supply Company, with a capital stock of $12,000. The company filed articles of incorporation this week. Charles J. Oswald is the principal stockholder.

The Wilder-Strong Implement Company, Monroe, Mich., suffered a severe fire loss February 24. The damage will cause a cessation of operations until the plant can be rebuilt.

The Pontiac Pouring Block & Brick Company is the name of a new organization formed in Pontiac, Mich., this week. The company will manufacture a new style of brick cement block invented by A. J. McIntyre of Detroit. A. E. McLintock is the organizer of the company.

Kalamazoo, Mich., is agitating the question of a new lighting plant. Either a new plant will be built or the present one thoroughly overhauled. A committee, with Alderman Maus as chairman, is advising with outside parties as to the probable cost of a new plant.

The B. O. S. S. Company of this city organized this week with a capital stock of $250,000, to manufacture a car with entirely new features. A peculiar feature of the car will be the adaptability to the wants of the owner. It is to perform all the functions of a passenger, delivery and merchandise car with a 35-hp. engine.

W. H. Steger, who for the past 11 years has been associated with the Whithead & Kales Iron Works, has left that concern to become a partner in the new Daigle-Steger Iron Works.

The South Haven Chemical Works, South Haven, Mich., is the name of a new company organized for the manufacture of a lime-sulphur solution for commercial spraying preparations.

The Rapid Turn Expeller Snow Plow Company is an entirely new industry for Detroit. The concern has a capital stock of $100,000, and will manufacture a patent snow plow for use on steam and electric railroads. Wm. H. Law has the company's affairs in hand.

The Phipps-Grinnell Auto Company is another addition to this city's auto concerns. The company has a capital stock of $100,000, with J. G. Phipps as president.

The Johnson Engineering & Construction Company, Battle Creek, has been organized. The purpose of the corporation is to install steel and iron work in buildings and bridges and to manufacture steel and other metals.

The Acme Screw Company has been incorporated, and will engage in business with a capital stock of $30,000.

The Seitz Automobile & Transmission Company, manufacturer of motor trucks and delivery wagons, Detroit, Mich., has had its foundry in operation since January 20, and for the present will make crucible steel castings only. Malcolm MacLeod, who is one of the oldest men in the crucible steel business in this country, and has been with well-known foundries in Chicago, Milwaukee and Minneapolis, is in charge.

The business of the Grand Rapids Machine Tool Company, Grand Rapids, Mich., has been incorporated, with $20,000 capital stock. The officers are: Matthew Lund, president; J. F. Nellist, vice-president; G. C. Mason, secretary and treasurer.

The Detroit Foundry & Mfg. Company has been incorporated at Detroit, Mich., with $50,000 capital stock. The company has leased a factory building at 13 and 15 Macomb street, which it has equipped for the manufacture of brass and aluminum, sheet metal work, automobile parts and accessories. John T. Rich is president; Dr. D. A. MacLachlan, vice-president; Jonathan Palmer, Jr., secretary; George E. Lawson, treasurer.

The Alma Mfg. Company, Alma, Mich., is making changes in its factory preparatory to the manufacture of motor trucks. Some new equipment will be purchased, although the company does not expect to greatly enlarge its facilities until later on.

The Michigan United Railways Company, Jackson, Mich., has a force of engineers on its lines taking measurements and obtaining sites and preparing specifications and estimates for the installation of power plants to be owned and operated by the company.

It is reported that the Gogebic & Iron Counties Railway & Light Company, Ironwood, Mich., is about to commence the construction of an electric light plant and railroad.

Indianapolis

INDIANAPOLIS, IND., February 27, 1911.

The Indiana Furnace Company, Indianapolis, has been incorporated with $10,000 capital stock, to manufacture furnaces. The directors are Edward H. Robinson, William M. Bliss and H. B. McKee.

The Wilson Window Guard Company, Indianapolis, has been incorporated with $10,000 capital stock, to manufacture window guards and other appliances. The directors are R. H. Wilson, W. W. Wilson and M. E. Nebeker.

The Bedford Stone & Construction Company, Indianapolis, has increased its capital stock from $100,000 to $200,000.

The Citizens Light & Fuel Company has been incorporated at Washington, Ind., with $75,000 capital stock, to supply light and fuel. The directors are Paul M. Taylor, Thomas Burns and L. P. Boyle.

The Oolitic Operative Quarries Company, Bedford, Ind., has increased its capital stock from $25,000 to $50,000.

The Southern Railway's repair shops at Youngstown,

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Ky., have been sold to the Kentucky & Indiana Bridge Company, and the repair work of the Louisville division of the road will be done hereafter at Princeton, Ind., probably making necessary the enlargement of the company's shops there.

The Contract Company, Evansville, Ind., has been incorporated with $10,000 capital stock to do a construction business. The directors are B. C. Hubbard, E. J. Avis and C. Jones.

The New-Idea Specialty Mfg. Company has been organized at Fort Wayne, Ind., to manufacture novelties. The directors are L. J. Libbing, H. L. Sommers, A. C. McCoy, G. A. Dehm, John Wilding.

The Beers-Offutt Construction Company, Fort Wayne, Ind., has increased its capital stock from $10,000 to $25,000.

Baltimore

BALTIMORE, MD., February 25, 1911.

While the general business situation in lines identified with the machinery, tool, iron and steel trades has changed but little, in some lines the month of February will show a slight gain over January. There is a feeling that a betterment is in sight, although some hesitancy is anticipated in lines identified with railroad work. It is too early to estimate the full effect which the adverse rate decisions will have on railroad buying, but it is thought that it will result in but a temporary check, as many roads are understood to be actually in need of equipment of various kinds.

Machine tool merchants report a somewhat better demand; while metal working tools have not been particularly active, woodworking machinery has been in much better demand and inquiries in most lines have been quite plentiful. The general market for tools continues along rather narrow lines, buying being confined principally to small lots and single tool propositions. The volume of business in small tools and machine shop supplies rules somewhat better, and in instances a very fair total for the month is reported. In the foundry trade irregularity characterizes the demand, particularly for machinery castings, but a fair business is being done in architectural and builders' castings.

While there have been no new building propositions of large size projected recently, work of fair size is quite plentiful. A few good contracts for buildings have come to fabricators of structural material, for which class of work competition is sharp, as few plants have more than enough work to enable them just to keep wheels turning. Considerable estimating is being done, but the major portion of the work offered is small. There has been a better proportion of municipal work offered and more is in prospect, but there has been little of late which directly interested machinery and tool makers. In some lines the demand from the Southern territory has been fairly active, in others the movement continues light. A moderate amount of work has been contracted for by heating and ventilating engineers, but the major portion of the orders recently taken have been small. Boilermakers are more active and an increase in engine sales is reported. While the trade scarcely anticipated any large volume of business during February, it is believed that with the opening of the spring season, near at hand, more active conditions generally will prevail and a betterment in practically all lines is expected during March.

Bids under revised plans for the construction of the new buildings for the Baltimore Bargain House are due on March 6. Local as well as out of town builders and contractors are estimating.

The Maryland, Delaware & Virginia Railway will make considerable improvements to its Light street piers. Information is to be obtained at the office of the company, Pier 1, Light street.

The Dix Mfg. Company, manufacturer of door hangers, reports a fair volume of business, principally from the South, business in the West and East being still somewhat irregular. From present indications a better demand is anticipated in the near future.

Painter & Posey, engineers, will supervise the engineering features of a heating plant and laundry to be installed in Frederick, Md. Details are not available at this time, although Mullett & Co., architects, are understood to be preparing plans for the necessary building.

It is reported that a company, to be known as the Maryland Metallizing Company, will be formed, with a capital stock of $100,000, and will erect a plant and engage in the manufacture of metallized products, particularly for interior finish. The process involves the metallizing of wood, plaster paris and other substances. George M. Griffith, Calvert Building, is reported as being directly interested in the new enterprise.

The Crook-Kries Company, while it has not booked any heavy heating and ventilating contracts recently, is actively engaged on several large orders. A very satisfactory amount of small work has been taken, and February will show a greater volume of actual business under way than was the case in January, prominently among which is the installation of the power, heating and ventilating equipment of the Fidelity Building, under the direction of Pearson Noah, consulting engineer.

Work of demolishing the old Munsey News Building, at Calvert and Fayette streets, has been begun, and city permits for the erection of the new building, designed by McKim, Mead & White and Baldwin & Pennington, architect, have been taken out. The new building will be 18 stories and fireproof throughout.

John S. Biddison and J. C. Bowen, receivers of the Baltimore Foundry Company, sold at public sale, under authority of the court, on February 24, the foundry equipment, tools, power equipment and supply of materials on hand, at its plant at Bush and Wicomico streets. The real estate was not sold, having been leased. The plant has been idle for something over a year.

John D. Adt reports a continued fair volume of business; the demand for elevators, tobacco machinery and other specialties has been good, and it is still necessary to operate various departments of the plant overtime in order to keep up with the demand. While the major portion of the orders recently received have been individually small, the aggregate is sufficient to bring the volume in February above that of the previous month.

The Baltimore Bridge Company has been awarded the contract for the structural work, 1500 tons, for the Woodward Building, Washington, D. C., and will also fabricate the steel work for the Empire Theater in this city. Orders have also been taken for the steel work for three small buildings for the Tidewater Portland Cement Company, Union Bridge, Md. This company is quite busy in its various departments and has sufficient work on hand to keep it fairly actively engaged for several months.

The T. C. Bashor Company notes a steady betterment in the demand for its various lines. Several moderate contracts for heating and ventilating have been taken, and estimates on further work of this character are out. Considerable business in boilers, tanks and special equipment has recently been booked and its boiler shop is fully engaged. A contract for a large amount of special pipe work in connection with the new addition of the Hochschild-Kohn Company has also been taken by this company. February business, however, has not been up to that of the previous month, which with this concern was particularly active.

Plans and specifications have been approved and bids for the erection of a power house and two cottages at the Springfield State Hospital, Sykesville, Md., have been asked by Dr. J. Clement Clarke, superintendent, at the address named.

Dietrich Brothers have recently taken a number of orders for small buildings, on which the quantity of structural and ornamental work runs from 25 to 100 tons. A good order for concrete bars from the Andrew Miller Company, contractor, for use in the construction of the Back River Bridge, in Baltimore County, is also noted, and the month's business will be ahead of that for January. Business in jobbing lines is reported light. Dietrich Brothers will move into their new office building, adjoining their present plant and which has just been completed, on March 9. The new ornamental and structural shop, now building, is progressing favorably and will be under roof in a few weeks.

Agreements have been filed covering the lease of the large factory property at Bayard and Nanticoke streets from the Consolidated Gas, Electric Light & Power Company by Harry W. Hunter, president of the Baltimore Gas Appliance & Mfg. Company, a new concern, which will manufacture gas ranges, heaters, &c.

The Baltimore Retort & Fire Brick Company has booked considerable business, particularly in work identified with boiler settings, orders for materials connected with that character of work for the Emmerson Hotel, Emmerson Tower Building, Hochschild-Kohn Company, Steiner Mantel Company and Mathai Ingram branch of the National Enameling & Stamping Company being recently taken. Good orders from interests in Washington, D. C., Wilmington, Del., and other points are also reported. The outlook for future business is good and the plant of this company, which has been particularly active of late, will in a few weeks be operated on full time.

The Aumen Machinery & Supply Company reports a better demand for machinery and tools. While the demand for metal working machinery has not shown any marked betterment, that for woodworking tools and machinery has been decidedly more active. Inquiries have increased and a large number of moderate propositions as well as a few sizable ones are being figured on. The general supply trade, while not yet fully up to normal, shows a betterment, and the outlook for more active business conditions is considered favorable.

A can packing plant is projected by Wm. Numsen & Sons, Inc. The proposed plant is to be erected at Chestertown,

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Md., and it is stated that further information in reference to it may be obtained by addressing J. H. Thomas, secretary, 18 Light street, Baltimore, Md.

Plans are in course of preparation for the erection of a light manufacturing plant to be erected for the Beehive commission, of which D. C. Amindon is chairman, at Preston street and Clifton place. The proposed building is to be fireproof, seven stories. Theodore W. Pietsch is the architect and P. C. Keilholtz, consulting engineer.

Plans and specifications for the erection of a large warehouse for the Western Maryland Railroad are, it is reported, to be revised. The proposed structure is to be four stories, of concrete and stone. It will be fireproof throughout and the latest facilities for warehousing installed.

The Consolidated Gas, Electric Light & Power Company has had plans and specifications prepared for the erection of a large storage battery plant adjoining its substation on McClellan alley, between Baltimore and Fayette streets. The building is to be two stories, of brick and concrete, with steel girders. The building will cost about $50,000, while the cost of the electrical equipment to be installed will aggregate $250,000. Bids for the construction of the plant will shortly be asked.

Bids for the new addition for the Polytechnic Institute, North avenue, between Guilford avenue and St. Paul street, were opened February 24. Plans are by Baldwin & Pennington, architects. The lowest bid, that of Charles L. Stockhausen, aggregating $385,000, is understood to be slightly above the appropriation, but it is probable that the contract will be awarded to the bidder mentioned. About 500 tons of structural material will be required under the present plans, and important heating and ventilation work is to be done. Henry Adams is the consulting engineer.

Considerable municipal work is expected to come out the next month or so. The Board of Awards of the city of Baltimore is now considering bids received last week for extensive sewer work and for water piping and heating apparatus in connection with the new sewage pumping station. Proposals for furnishing the Department of Street Cleaning with supplies for the year ending March 15, 1912, will be received by the board until March 1. These include hose and supplies, carts and bodies, hardware, tools, iron and steel, &c. Bids will also be received until March 15 for extensive work for the Sewage Commission, under contract No. 12, specifications for which may be obtained by application to the commission. Among other items mentioned under this contract are 110,000 lb. of steel reinforcement and a number of manholes, inlets and inlet connections.

Cincinnati

CINCINNATI, OHIO, February 28, 1911.

The South has recently furnished local machine tool builders some excellent but scattered business. Orders are mostly for lathes, and February is reported by a few lathe makers as being a better month than any since June of last year.

The recent decision of the freight rate question is expected to bring out some good business soon from the railroads, as there is now no incentive for them to hold back on orders for equipment needed. Thus far, however, the railroads in this vicinity have made no move toward placing any large orders for machine tools.

There is said to be some improvement in the demand for boilers. Inquiries for sawmill and woodworking machinery are also increasing.

Cincinnati manufacturers are taking a great deal more interest in foreign business. S. P. Eagan of the J. A. Fay & Eagan Company, one of the largest exporters here, is one of the leading spirits in trying to impress on local manufacturers the importance of this trade, especially with nearby Spanish-American countries, and it was largely through his efforts that a series of meetings were arranged for the latter part of next week, which will be addressed by J. Nelson Polhamus, Cuban Consul at New Orleans. Mr. Polhamus intends to give some interesting information as to why European merchants are able to control so large a percentage of business in Cuba in competition with America.

To manufacture and deal in machinery the Beard-Stephan Company has been incorporated at Columbiana, Ohio, with $10,000 capital stock. The incorporators are Clement E. Beard, Fred Thomason, J. R. Jeffrey, Fred D. Lodge and J. E. Hazard.

The Imperial Motor Car Company, Cincinnati, is to build a large garage on Madison avenue, which will probably be fitted up with a small repair shop later.

It is reported that the Greenville Light & Power Company, Greenville, Ohio, has plans under way for an addition to its plant. The company's capital stock was recently increased from $30,000 to $50,000.

The Carolina & Northwestern Railroad, L. T. Nichols, general manager, Chester, S. C., is inquiring in this market for prices on the machinery list given below. It is understood that purchase of this equipment will be made within the next few days:

One 24-in. back geared shaper.
One 3-ft. heavy duty, high speed, back geared radial drill.
One 21-in. back geared upright drill, with tilting table.
One iron planer, 24 x 42 in. by 13 ft., having two or more speeds; one head on cross rail and one head on side.
One 36 x 36 in. by 13 ft. planer, similar specifications as above.
One 18-in. by 12-ft. engine lathe.
One 24-in. by 12-ft. engine lathe.
One 36-in. by 12-ft. engine lathe.
One 42-in. by 18-ft. engine lathe.
One 24-48-in. by 12-ft. extension lathe.
Two 16-in. by 16-ft. gap lathes, equipped with taper attachments.
One car wheel boring machine.
One individual rotary flue cleaning machine.
One 2-in. bolt cutter, with dies to cut all U. S. standard threads from ⅜ to 2 in.
One belt driven air compressor.
One two-wheel Beneck twist drill grinding machine.
One 50-hp. steam engine.
One 50-hp. steam boiler.
One combination rip and cut-off saw, to take saws up to 14 or 18 in. in diameter.
One 12-in. universal woodworking machine with large back table top, &c.
One 48-in. heavy duty band saw (make price for motor driven saw also).

Plans for the new factory of Kirk & Blum, Cincinnati, have about been completed and the company is soliciting quotations on the necessary metal working machinery. They are especially desirous of getting in touch with a manufacturer who can furnish them a machine for cutting, edging, forming and seaming of galvanized iron rectangular ducts.

Connill, Demers & Co., Bahia, Brazil, have written the Cincinnati Commercial Association asking for the names of manufacturers of sawmill machinery here. It is stated this company is in the market for a large lot of machinery for its own account.

To operate a canning factory the Mason Canning Company has been incorporated at Mason, Ohio, with $12,000 capital stock. The incorporators are Newton E. Runnell, C. C. Enloss, W. R. Chase, W. E. Scott, George W. Tetrick, M. C. Wikoff and W. H. Williamson.

The Jaeger Machine Company, Columbus, Ohio, has increased its capital stock from $25,000 to $40,000.

The City Council of Sandusky, Ohio, is preparing to establish a municipal electric light and power plant.

The Superior Gas Engine Company, Springfield, Ohio, is considering the erection of an addition to its plant this spring, 200 x 600 ft., two stories. This addition will practically double the capacity of the company.

The Foos Gas Engine Company, Springfield, Ohio, is making preparations to build an addition to its plant this spring, 80 x 300 ft., at an estimated cost of $50,000.

Toronto

TORONTO, February 25, 1911.

The reciprocity agreement and the chances of its being established are occupying the thoughts of the great mass of the Canadian people. The uncertainty of the issue has evidently a quieting influence upon business. There are some projects that will not be carried out if the agreement becomes law, and there are others that will be undertaken only in the event of its becoming law. From several towns come reports that construction on proposed American branch factories is being delayed, and will be abandoned if reciprocity is established. From the West come assurances that Hill lines from the border will at once be built into the interior if the agreement passes. Few careful people will venture an opinion as to whether the sum of the effects of reciprocity would be immediately good or bad. All agree that the present state of indecision on the subject is bad, and hope that it will not be unduly prolonged. Unquestionably the sense of Canadian manufacturers is against reciprocity, but to chronicle that as a fact is not to report that they are convinced their business will suffer from the present measure of reciprocity. They are afraid of the wedge being driven farther in the near future if the edge is inserted now. One instalment of reciprocity will, they think, bring on another, and, however that might affect other Canadian industries, the manufacturers have no doubt it would be bad for theirs.

The Beach-Edison Car Company has written to the City Engineer, Toronto, offering to supply the municipality with double track storage battery cars at $12,500 each in Jersey City, N. J. This would mean a price of about $16,000 for the cars delivered in Toronto. The city would require 40 of such cars for the lines proposed to be operated at present.

The first part of Winnipeg's municipal hydroelectric power plant is nearly completed. When the whole plant is completed it will contain 14 generator units of 5200 hp. each, and two exciters of 500 hp. each. The five generators and two exciter sets that make up the present installation

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have been supplied by Jens Orten-Böving & Co., London, England.

The Spanish River Pulp & Paper Company has completed arrangements for the building of a paper mill in connection with its big pulp mill at Espanola, Ont., the capacity to be 100 tons per day, and the cost to be $1,000,000. It is expected that the mill will be ready for operation by next October. Tenders are being called for the construction of the buildings and the machinery is being arranged for with Canadian and American makers of such plant.

The principal boards of trade throughout Canada have passed resolutions disapproving the reciprocity agreement.

It is announced that the Oliver Chilled Plow Works Company of Canada, which recently took out a permit for the construction of an additional $200,000 building in Hamilton, Ont., will spend $600,000 on its plant there as fast as it can get the work done for that outlay.

Hamilton manufacturers using hydroelectric power are complaining loudly of the interruption of the Cataract Power Company's service because of accidents to generators.

H. E. Vautelet has tendered to the Dominion Government his resignation from the Board of Commissioners appointed for the construction of the Quebec Bridge. The official design, which was largely his work, was not the one finally adopted, the two engineers appointed after the tenders were in having, it is understood, decided the choice in favor of a plan submitted by the St. Lawrence Bridge Company, along with a tender for building the bridge in accordance therewith. Within a few days it will be announced in Parliament what firm is to get the contract. Representatives of the St. Lawrence Bridge Company are now in Ottawa presumably in connection with the business.

To induce manufacturers to use the power the municipality is taking from the Hydro-Electric Power Commission the City Council of Guelph, Ont., has been agreeing to install motors and sell the power at a price that is supposed to be attractive. To this exception has been taken by the commission, but the City Council is disinclined to change its policy, which means an increased demand for motors.

Edwin L. Gould of the Gould, Shapley & Muir Company, Brantford, Ont., manufacturer of gasoline engines, pumps, &c., is in favor of the reciprocity agreement.

The North American Smelting Company has purchased a site for a lead smelter in Kingston, Ont.

The Engineers' & Plumbers' Supplies Company is planning to erect a large warehouse in Regina, Saskatchewan, in the spring.

The Ideal Foundry Company is building a new foundry in Chatham, Ont.

Announcement is made that the British Columbia Marine Railway Company will build a dry dock to cost $3,000,000 at Lang's Cove, Esquimault, on Vancouver Island.

A United States company using iron and steel as raw materials is in negotiation with the Industries Committee of Chatham, Ont., for the establishing of branch works there to cost between $50,000 and $100,000, and employ 150 men.

It is stated that a depot to cost $1,000,000 will be built at Winnipeg, Man., for the Hill railroads.

The Canadian Gate Company, Ltd., has been incorporated at Guelph, Ont., with $40,000 capital stock, and will commence the erection of a factory building about March 1. H. Ralph Steele is manager of the company.

The Welland Machine & Foundry Company, Welland, Ont., has been organized by J. H. Crow, W. H. Crowther, G. W. Sutherland and others, who will obtain a provincial charter. The new company will take over and continue the manufacturing business of the Robertson Machinery Company at Welland.

The Climax Good Roads Machinery Company, Hamilton, Ont., has been granted a charter by the Dominion Government, with a capital stock of $40,000, to manufacture road machinery. Among the directors are John Robinson, Hanlan Robinson and Wm. J. Robinson.

The Pratt & Letchworth Company, Buffalo, N. Y., manufacturer of iron, steel and malleable castings, will establish a Canadian branch at Brantford, Ont., having obtained a provincial charter under the name of the Pratt & Letchworth Company, Ltd., with a capital stock of $350,000, to manufacture iron and steel products. Ogden P. Letchworth of Buffalo is president of the company.

The City Council of St. Catharines, Ont., has passed an ordinance granting the Steel & Radiation Company 35 acres of land on which to build the extension plant it is planning to erect in that city.

The F. N. Burt Company, Ltd., Toronto, the Canadian branch of the F. N. Burt Company, Buffalo, N. Y., has increased its capital stock from $1,500,000 to $2,250,000 by the issuance of $750,000 additional preferred stock. Of this new stock between $300,000 and $350,000 will go as purchase price for the Dominion Paper Box Company of Toronto, recently acquired by the Burt Company, which will operate the plant from now on.

The Adam Hall Company, Ltd., Peterborough, Ont., has been granted a charter, with a capital stock of $100,000, by the Dominion Government to manufacture stoves and ranges. The provincial directors are Adam L. Hall, Wm. T. Hall, Robt. R. Hall and F. Hall, all of Peterborough, Ont.

Milwaukee and the Northwest

The I. B. Rowell Company, Menominee Falls, Wis., is preparing plans to build a complete new and up to date manufacturing plant with a floor space of approximately 200,000 sq. ft., which will be equipped with the necessary machinery for the manufacture of agricultural implements.

The Dillingham Mfg. Company, Sheboygan, Wis., has recently completed the erection of a warehouse, 35 x 150 ft., for the storage of refrigerators.

The Brandt-Dent Company, Watertown, Wis., is contemplating the erection of a brass foundry, 32 x 32 ft.

The City Council of Menasha, Wis., is considering ways and means of increasing the capacity of the municipal light plant.

Baraboo, Wis., has under consideration the construction of a light, heat and power plant at an estimated cost of $45,000.

The Phoenix Chair Company, Sheboygan, Wis., will place a contract within the next 15 days for a three-compartment dry kiln, cross pile, moist air system. The structure will be 58 x 94 ft. A considerable amount of 30-lb. steel rails and 1-in. steam piping will be purchased.

The Fort Madison Chair Company, Fort Madison, Wis., has increased its capital stock from $75,000 to $100,000, and will increase the capacity of its plant by the installation of new machinery. Wood boring machines, beaded post and back post sanders, and possibly additional equipment for the finishing department, will be purchased.

The Four Wheel Drive Auto Company, Clintonville, Wis., will let contracts March 8 for the construction of a factory building, 60 x 120 ft., and a power house, 30 x 40 ft., to include everything but composition roofing, power plant, transmission machinery and machine tool equipment. The power house will be equipped with a 100-hp. engine and two boilers of about 60 hp. capacity each, to be purchased during the latter part of March. The machine tool equipment will be purchased some time in April.

The McClintock Mfg. Company, for the past six years located in St. Paul, Minn., has been reorganized and has decided to remove its plant to Minneapolis, where it will erect a new factory building in case a suitable building cannot be found. The company states that it will be in the market from time to time for light and heavy machinery as conditions warrant.

The Watertown Plow Company, Watertown, S. D., will erect an addition to its plant this spring, 80 x 100 ft., one story.

The Southwest

The Merchants' Light & Power Company, Ogden, Utah, has filed articles of incorporation with $500,000 capital stock. The company has been granted a franchise to operate a lighting system and will begin work immediately on the construction of a power plant. M. S. Browning is president of the company.

A bill is before the Legislature of the State of Utah for an appropriation of $40,000 for the construction of an electric power house at the Agricultural College at Logan.

Seneca, Kan., will expend $15,000 to improve its water works system.

The City Council of Durant, Okla., has voted to adopt plans and specifications for the construction of an electric light plant. The City Clerk has been instructed to advertise for bids.

The city of Pine Bluff, Ark., is petitioning the Legislature for authority to include Jefferson county, with a view to building a free bridge across the Arkansas River at that point.

The Jonesboro Roller Mill Company of Jonesboro, Ark., will soon erect a 50,000-bu. grain elevator of steel and concrete.

W. H. Echols and Edward Rankin, formerly of Faxon, Okla., will erect at De Witt, Ark., a plant for the manufacture of ice and a creamery.

The Williams Lumber & Mfg. Company, Springfield, Mo., has been incorporated, with a capital stock of $15,000. The incorporators are .T E. Williams, J. F. Legan, H. B. McDaniel and others.

The N. A. Kennedy Butter Tub Company, Kansas City, Mo., has been incorporated. The capital stock is $20,000. The incorporators are N. A. Kennedy, H. C. Offutt, J. C.

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Forrest and others. The company will engage in the manufacture of butter tubs, &c.

The citizens of the town of Billings, Mo., are agitating the question of a water works system.

The Crushed Rock & Concrete Company, Kansas City, Mo., has been incorporated. The capital stock is $50,000. The incorporators are W. H. Caffrey, C. A. Roe and R. L. Caffrey.

The South

LOUISVILLE, KY., February 28, 1911.

Power equipment manufacturers and dealers report a heavy increase in the volume of business from all over the South. One of the largest factors in the improvement in the demand is the noticeable increase in the number of water works projects. In Kentucky and Tennessee, also, the development of coal properties is affording an outlet for a large quantity of power machinery. The completion of the Wasioto & Black Mountain Railroad from Wasioto to Harlan, Ky., which will open up new coal deposits, is expected to stimulate business in that direction.

The Henry Vogt Machine Company, Louisville, has sold an 1800-hp. boiler to the Louisville & Nashville Railroad for its new shops at Boyles, Ala., which are now being completed. Other recent sales include a 300-hp. boiler to the Delta Electric Light, Power & Mfg. Company, Greenville, Miss.; a 150-hp. boiler to the Independent Ice Company, Nashville, Tenn.; a 500-hp. boiler to the William Gerst Brewing Company, Nashville, and a 400-hp. boiler to the Center-Freze Ice Mfg. Company, Atlantic City, N. J.

Following the death of C. J. Walton, head of the boiler manufacturing firm of C. J. Walton & Son of Louisville, the business has been incorporated under that name with a capital stock of $50,000, by D. A. Walton, E. O. Jones and J. E. Coleman. No changes in the plant are contemplated.

The repair shops of the Southern Railway at Louisville have been turned over to the Kentucky & Indiana Terminal Railroad Company, which it partially controls. They will be improved and enlarged in order to take care of the increased business of the terminal company, which is now constructing a $2,000,000 bridge over the Ohio River.

The Barbourville Brick & Tile Company, Barbourville, Ky., plans to double its capacity, and is already purchasing equipment with that end in view.

The Nortonville Coal & Coke Company, Nortonville, Ky., is planning the erection of a power house and the improvement of its facilities. It will also furnish the municipality with electric lights.

The Foltz Mfg. Company, Humboldt, Tenn., ice manufacturer, is purchasing new equipment, which will double its capacity.

The Dominion Iron Works, Bristol, Tenn., has increased its capital stock from $50,000 to $100,000.

The Humboldt Marble & Granite Works, Humboldt, Tenn., has purchased adjoining property, and will greatly enlarge its capacity. Most of the equipment has been purchased.

The American Metallic Packing Company, Lexington, Ky., is in the market for woodworking machinery, including a 7-ft. band mill, engines and boilers, and is also to purchase logging equipment and railroad supplies.

The Wisconsin Steel Company, which is erecting coke ovens of large capacity at Yowell, Ky., is in the market for considerable equipment. Bids are now being taken on eight 150-hp. tubular boilers, two 250-kw. generators, a 100-kw. generator, two twin 160-hp. engines, to be used in driving coal crushers, and a 150-hp. wide crank engine to operate the ventilating system.

The Severance Mfg. Company has filed articles of incorporation at Nashville, Tenn. It has a capital stock of $100,000, and the principal incorporators are V. C. Severance, W. M. Joseph, A. F. Whitman and Henry Sperry. The company will manufacture patented hardware specialties, including domestic gas plants, lamps, carbureters, burners and similar appliances. A plant will be erected at Nashville, it is announced.

A bill has been introduced in the Tennessee Legislature authorizing the Knoxville Power Company to construct a dam on the Little Tennessee River.

Jackson, Tenn., has rejected the proposition of the Jackson Railway & Light Company to illuminate the streets, and will operate its own plant, as heretofore. The plant will be improved, however, and a bond issue of $20,000 will be made in order to secure funds for the purchase of new equipment.

The Glendale Lumber Company, Glendale, Ky., is building a planing mill, and besides installing the necessary woodworking machinery will purchase a 15-hp. gasoline engine.

Favorable action has been taken in the Tennessee Legislature on the proposal to allow Gallatin to issue $10,000 of bonds for the purpose of establishing an electric light plant and water works.

The Queen City Machinery Company is being organized at Gadsden, Ala. It will have $6000 capital stock. Under an arrangement made by a commercial organization of Gadsden for the encouragement of new enterprises, a bonus of 10 per cent. of its investment, or $600, will be given the new company.

The Ross-Meehan Company, Chattanooga, Tenn., is erecting an addition to its foundry to take the place of a building which burned recently.

The Lexington Marble & Granite Works has been organized at Lexington, Tenn., and will be managed by Joseph W. Fuller. A plant will be equipped and put in operation in the near future.

The Multiple Phonograph Company, Chattanooga, Tenn., has completed oragnization, and is now selecting a site for its plant, which will be erected and equipped at once. D. T. Biakey is general manager of the company, which, as the name indicates, will manufacture a phonograph capable of reproducing several records successively. Moving picture machines will be manufactured later, it is announced.

The West Kentucky Coal Company, Sturgis, Ky., is planning an increase in its annual output from 500,000 to 2,000,000 tons. The company is operated by the North American Company of New York.

L. A. Long of Long's Towel Supply, Louisville, is organizing a company for the manufacture of a patented smoke preventer. He states that a plant will be erected here following organization.

The Meridian Planing Mill Company, Meridian, Miss., which incorporated recently, with $25,000 capital stock, will purchase a large timber sizer and fast-feed matcher, together with other wood-working and power equipment, for its mill, which is now in course of erection.

A bill has been introduced in the Arkansas Legislature providing an appropriation of $75,000 for a heating plant for the new capitol building. The appropriation will probably be authorized.

Gadsden, Ala., is completing the construction of a new water works system. The cost of the remaining part of the plant is estimated at $50,000.

The Humboldt Cotton Mills, Humboldt, Tenn., is considering the installation of new textile machinery.

J. F. Norman, representing Eastern capital, is to ask for a franchise for a water works system at Lonsdale, Tenn. The company, which is to be formed, will invest $75,000 in a plant if the franchise is granted.

It is reported from Chattanooga, Tenn., that with the completion of the plant of the East Tennessee Power Company on the Ocoee River a large number of manufacturers in that city will substitute electric for steam power. Changes in equipment will, of course, be necessary.

The Kosmos Portland Cement Company, which has general offices in Louisville, is considering making improvements in its plant at Kosmosdale, Ky. The exact nature of the improvements has not been stated.

The Mengel Box Company, Louisville, is now equipping a large factory in Jersey City, N. J., which will be used for the manufacture of cigar boxes. It will be one of the largest plants of the kind in the country.

H. L. Witt & Sons, Morristown, Tenn., are considering the establishment of a plant for the manufacture of wagons.

W. H. Isabell of Bowling Green, Ky., is interested in an electric light plant to be established at Bay Minette, Ala., at a cost of $200,000.

A bond issue of $50,000 is to be authorized by Tupelo, Miss., for the enlargement of the water works and other improvements.

Brinton B. Davis of Louisville is the architect for the new $750,000 hotel to be built here by Sam P. Jones and J. E. Gamble on Walnut street, near Fourth. The building will have its own power plant.

Bids have been received by the Bond Commission of Gainesville, Ga., for the construction of a water works system. R. D. Mitchell is chairman of the commission.

Mansfield, La., is offering a franchise and bonus for the establishment of a water works plant.

The Sybilla Elevator & Mfg. Company has been incorporated at Chattanooga, Tenn., for the manufacture of passenger and freight elevators. The company has $50,000 capital stock. Frank Sybilla, John I. Quentel and others are the incorporators.

It is reported that the National Adding Machine Company, recently incorporated at Nashville, Tenn., with $15,000 capital stock, has leased a building and will equip it for the manufacture of adding machines. Charles Wales is general manager of the company.

The Chick-Wood Safe Company, Memphis, Tenn., manufacturer of steel safes, is inquiring for pressed steel shapes, drop forgings, castings and malleable iron parts.

B. J. Robinson, Vicksburg, Miss., will shortly begin the

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erection of a new machine shop and foundry, and later on will install mechanical equipment.

The Thornhill Wagon Works, Lynchburg, Va., has completed plans for the erection of new factory buildings to replace the plant recently burned. The main building will be 100 x 600 ft., of mill and slow burning construction, and will be equipped with the most modern sprinkling devices. In addition there will be several smaller buildings which when completed will give the company more than twice the floor space formerly occupied.

The Henderson Buggy Mfg. Company, Henderson, N. C., has been incorporated with $25,000 capital stock. The incorporators are R. J. Corbitt, R. A. Jones and A. C. Zollicoffer.

The cotton gin owned by Wallace Ratcliff, Washington, Miss., was destroyed by fire February 16, causing a loss of $3500.

The Southern Foundry Company, Nashville, Tenn., has been incorporated with a capital stock of $10,000 by W. L. Looney, A. J. Witt, Paul Huggins, O. H. Looney and S. B. Duggan.

Pacific Coast

PORTLAND, ORE., February 21, 1911.

A fairly good demand for metal working tools is being experienced in Portland and other manufacturing points of the north Pacific Coast. A few orders are being placed, and more are in prospect, for large assortments, while the volume of small purchases from a scattered territory is gradually increasing. Much of the equipment used in logging and development work is manufactured here and on Puget Sound, and indications are favorable for an extremely active year in all the shops. Among the principal local items are additions to the equipment of the Willamette Iron & Steel Works and purchases for railroad shops.

The present building activity in Portland will furnish a market for a large amount of machinery. The lumber industry, which has been among the principal features of this territory, is beginning to revive after the quiet winter period, and many inquiries are coming in for both mill and logging equipment. Logging railroad development will be carried out on an unusually large scale, and many new locomotives will be required. The larger railroad interests are also beginning work on extensive improvements. Salmon packers are purchasing considering machinery for canneries in Oregon, Washington and Alaska, and are installing more improvements than usual in their vessels. Agricultural development in Oregon, Washington and Idaho is proceeding very rapidly and implement manufacturers, who had an excellent year in 1910, anticipate even more activity this season. Figures are now being taken on several large electric power installations, on which orders are expected within the coming month.

Dredging plans for Oregon ports, if carried out, will require a large amount of machinery. Arrangements are now being made for the construction of two large suction dredges to deepen the channel from Portland to the mouth of the Columbia. Plans are also being drawn for a dredge, for which the Government has appropriated $300,000, for service on Coos Bay, on which local manufacturers will have an opportunity to bid.

The Portland Shipbuilding Company has taken a contract for the hull of a ladder dredge for the Portland Sand Company, at $17,000.

It is announced that contracts will be let in a few days by the Portland Railway, Light & Power Company for the third and largest of its hydroelectric plants on the Clackamas River. The estimated cost is about $3,000,000. This company also has plans under way for a large repair plant and car shop adjoining the Southern Pacific shops in this city.

Bids are being taken for a power house for the Multnomah County, Ore., farm.

The Tacoma Foundry & Machine Company, Tacoma, Wash., recently incorporated by W. Webb, John Taylor and T. B. Hall, has purchased a 2½-acre factory site at Tacoma, and will erect a foundry and pattern shop. It expects to have the plant in operation this spring.

John A. Stein of the Grays Harbor Iron Works, Hoquiam, Wash., announces that the company will erect a new building and install considerable machinery this spring.

The city of Tacoma, Wash., is taking bids on machinery for the municipal hydroelectric plant, known as the Nisqually River development.

Contracts are to be let shortly for construction work on the North Coast Railroad, a subsidiary of the Oregon Railroad & Navigation Company, between Spokane, Wash., and the Snake River.

A contract is pending for the construction of large tanks for the storage of fuel oil for the Cascade division of the Great Northern Railroad. In addition to the tanks, a large amount of work will be involved in preparing the locomotives for the use of oil for fuel.

Broughton & Wiggins of this city are making arrangements for the construction of a logging railroad from their timber tracts on Barber Mountain to the Columbia River.

The Washington-Oregon Corporation has taken over a number of light and power plants in Washington towns, and intends to add new units to several of the plants.

The Olympic Portland Cement Company, with a capital stock of approximately $1,500,000, has been organized in London by interests connected with the English and American shipping firm of Balfour, Guthrie & Co. Its purpose is to carry out the project started by the latter concern, to install a large cement plant near Bellingham, Wash.

The Lovegren Lumber Company is working on a project for extensive development near Gaston, Ore. It includes five miles of railroad, for which contracts have been let, a large sawmill and a hydroelectric lighting plant.

The Grant's Pass Lumber Company, Grant's Pass, Ore., has purchased an old mill at that place, the equipment of which will be sold. About 15 new woodworking machines, with electric motors, will be installed.

The Southern Pacific Railroad shops in Portland were but slightly damaged by fire February 14.

Representatives of the Hercules Steel & Iron Works of Texas have been looking over the ground at Oregon City, Ore., with a view to establishing a plant there.

The Brown-Lewis Company, manufacturing agricultural machinery at Walla Walla, Wash., is planning to enlarge its plant.

The Curtis Power Boat Company, Milwaukee, Ore., has increased its capital stock, and is planning to erect a new factory at Vancouver, Wash.

R. E. Wattenberg of Klamath Falls, Ore., has ordered a number of woodworking machines from local dealers.

The Colfax Harvester Company has been incorporated at Colfax, Wash., by A. McRae, P. B. Stravens, J. Hampton and others, and is planning to install a factory for agricultural machinery.

The Newberg Mfg. & Construction Company, Newberg, Ore., is planning to add a lot of machinery, including a dust collecting system.

The Spokane Asbestos Fire Brick Company, now operating a small plant at Spokane, Wash., is making arrangements to spend about $10,000 on new equipment this summer.

The city of Lewiston, Idaho, has ordered a 350-hp. pumping engine from Chas. C. Moore & Co.

The Inman-Poulson Lumber Company will start work shortly on a large sawmill at St. Johns, Ore.

The Puyallup Veneer Panel & Fir Door Company, Puyallup, Wash., recently incorporated, has secured an old mill in which several new machines will be installed.

The town of Goldendale, Wash., is in the market for a small rock crushing outfit.

The Umatilla Storage & Commission Company, Hermiston, Ore., will enlarge its plant by the erection of new buildings and the installation of a steam roller feed mill this season.

St. Louis

ST. LOUIS, February 27, 1911.

The week has been rather quiet in machine tool circles here, although some fair orders have been booked. In the opinion of machine tool men, the rate decision will not affect buying adversely to any great extent, and most of them consider it likely to make confidence increase.

The Ludlow-Saylor Wire Company is quite busy at this time on its specialties.

The Moran Bolt & Nut Company finds business materially improving.

The Mount Vernon Car Mfg. Company, Mount Vernon, Ill., is now getting its large new steel car plant into good operating order. It has purchased all the equipment required.

The firm of Albert B. Bowman has been superseded by the Bowman-Blackman Machine Tool Company, due to the entrance into the firm of G. H. Blackman, who is an experienced machine tool man, a graduate of the mechanical engineering department of the University of Missouri, and has been with the Bowman establishment for nearly two years. The business will be continued at 720 North Second street, where a good assortment of sample machines is carried. The firm represents exclusively, among others, the American Tool Works Company, King Machine Tool Company, Barnes Drill Company, Kempsmith Mfg. Company, Lea Equipment Company, Massillon Foundry & Machine Company, Mechanics Machine Company, Cleveland Planer Works, Foote-Burt Company (on bolt cutters), Cincinnati Pulley Machinery Company and Greenfield Machine Company.

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The Mound City Brewing Company, St. Louis, has been incorporated with a capital stock of $50,000. The incorporators are Hermann Hannibal, John M. Hannibal, T. L. Pepperling and others.

The Universal Gas Machine & Mfg. Company, St. Louis, has been incorporated with a capital stock of $15,000. The incorporators are F. L. Pohlmann, Edward Huber, Geo. Brandt and others. The company will engage in the manufacture of gas machines, window lighting fixtures, &c.

The Miller Cigar Vending Machine Mfg. Company of St. Louis has been incorporated with a capital stock of $50,000. The incorporators are O. S. Miller, Maude C. Miller and Lucille Miller. The company will engage in the manufacture of vending and other machinery.

The A. Leschen & Sons Rope Company, at the annual gathering of branch managers and salesmen, reported that the outlook in the wire rope business for the present year is very gratifying. There is a growing demand for aerial wire rope tramways, some of which have been built to the length of 16 miles.

The Dildine Bridge & Iron Company, Cameron, Mo., will remove its plant in about two months to Hannibal, Mo., where it is erecting new fireproof buildings.

Texas

AUSTIN, TEXAS, February 25, 1911.

The recent heavy rains in the irrigated sections of Texas and northern Mexico filled up the newly constructed water storage reservoirs and enabled many pumping plants to be placed in operation. The water storage movement has gained great headway in the semiarid region of the Southwest and Mexico during the last year, and by this means of conservation big areas of land are being reclaimed and placed in cultivation. It has created an increased demand for irrigation machinery and encouraged activity in other lines of industry.

James W. Arnold of South Charleston, W. Va., contemplates establishing an iron foundry and rolling mill at Austin. He has taken the matter up with the Manufacturers' Committee of the Austin Business League.

John C. Underwood has been awarded the contract by the Board of Commissioners of Dallas for the construction of a large sanitary sewer through South Dallas. The work will cost about $32,000. Mr. Underwood gave bond in the sum of $16,000 for the completion of the work in 120 working days.

The contract for the equipment of the proposed modern filtration plant that is to be installed at Temple, Texas, has been let to the Pittsburg Filter Mfg. Company of Pittsburgh, Pa. The contract for the building and other work connected with the plant was let to W. C. Rettiger of Belton, Texas. The plant will cost $27,190 and will have a capacity of 2,000,000 gal. every 24 hours.

The City Commissioners of Corpus Christi, Texas, have under consideration plans for enlarging the water works plant and increasing the water supply. The completion of the sewer system will double the city's consumption of water, it is stated.

Taylor H. Allen and H. J. Price will establish a plant at Gonzales, Texas, for the manufacture of steel bridges and road machinery. The site for the proposed industry was recently purchased, and it is stated that the erection of the plant will soon be started.

A branch factory of the Cotto-Waxo Products Company, St. Louis, Mo., will be located at Waco, Texas. The machinery that is to be installed in the new plant will cost about $20,000. J. C. Bunch of St. Louis is president of the company and is giving the matter of establishing the branch factory his personal attention.

The McDade Brick Company, Houston, Texas, has been incorporated with a capital stock of $40,000. The incorporators are E. F. Brown, Geo. L. Teat, S. J. Spencer and N. F. Delatte.

The Christopher Mfg. & Lumber Company of Beaumont, Texas, has been incorporated with a capital stock of $25,000. The incorporators are F. E. Howard Newcomb, T. E. Christopher and J. C. Christopher.

Farther Central West

The One Minute Mfg. Company, Newton, Iowa, washing machines, has recently completed the erection of a two-story brick building, 50 x 160 ft., to provide additional facilities for the manufacture of gasoline engines.

Voss Brothers Mfg. Company, Davenport, Iowa, has just completed a new factory, which will be used exclusively for the Voss line of washers.

The Wixcel Mfg. Company, Marcus, Iowa, farm implements, will move to Sioux City, Iowa, where it will erect extensive manufacturing buildings which will cost in the neighborhood of $40,000. Details of the plant and equipment to be installed have not been decided upon at this time.

The McDonnell Boiler & Iron Works, Des Moines, Iowa, has just completed an addition to its foundry, 66 x 100 ft., and the installation of new core oven equipment and several molding machines.

The Hall Mfg. Company, Monticello, Iowa, steel safety hoists, wire stretchers, garden plows and post hole augers, has increased its capital stock from $50,000 to $100,000, and will raise its main factory building, 64 x 100 ft., another story, and install a central steam heating plant. A large warehouse will also be erected, but plans have not been made.

The Aluminum Mfg. Company, Des Moines, Iowa, is moving into new quarters, which will practically double its capacity. Considerable new machinery will be installed.

The Cedar Rapids Machinery & Supply Company, Cedar Rapids, Iowa, will move into new quarters in the near future.

The Zimmerman Steel Company, Lone Tree, Iowa, is at present equipping a sand grinding and casting cleaning room, having a floor space of 30 x 40 ft., with a 72-in. sand grinder, with two 14 x 36 in. crushing rolls, one 40 x 48 in. and one 48 x 72 in. tumbling mill and electro magnetic separators. Later on the company expects to build a 48-in. concrete stack 60 ft. high and a boiler and engine room of concrete about 60 x 72 ft., roof to be constructed of steel and lined with asbestos. The new equipment being installed will be electric driven.

J. H. Hart, Danbury, Iowa, will install an ammonia refrigerating plant at his market establishment. The best type of power driven machinery will be purchased.

The Sioux City Packing Company, Sioux City, Iowa, will erect a new plant of large capacity, which will cost upward of $125,000.

The Shenandoah Heat & Light Company, Shenandoah, Iowa, is contemplating the erection of an ice making plant, to cost $12,000.

McCullough & Son, Sioux City, Iowa, manufacturers of feed troughs, will build a large addition to their factory.

The Des Moines Structural Steel Works, Des Moines, Iowa, is in the market for an air compressor.

Government Purchases

WASHINGTON, D. C., February 27, 1911.

The Paymaster-General, Navy Department, Washington, will open bids March 7, under schedule 3340, class 21, item A, for one barge, steam boiler and pumps; item B, one self-propelling barge, steam boiler and pumps, and item C, one barge, self-propelling, steam boiler and pumps, combustion engines.

The Bureau of Supplies and Accounts, Navy Department, will open bids March 21, schedule 3366, for one mortising machine, and schedule 3667, for two motor driven lathes.

The Paymaster-General, Navy Department, Washington, will open bids March 7, under schedule 3354, for one steam brake windlass with warping attachment.

The Construction Quartermaster, Fort Sam Houston, Texas, will open bids March 21 for furnishing and installing one compound or triple expansion pumping engine, capacity 1,000,000 gal. in 24 hours.

The Constructing Quartermaster, Fort Bayard, N. M., will open bids March 18 for furnishing and installing one motor driven submerged type centrifugal or impeller type pump, capacity not less than 200 gal. per minute.

The Bureau of Supplies and Accounts, Navy Department, Washington, will open bids April 4 for one electrical crane, schedule 3368.

Bids were opened February 16 by the superintendent of prisons, Department of Justice, Washington, D. C., for furnishing an electric light and power installation for the United States Penitentiary, Leavenworth, Kan., as follows: F. E. Newbery Electric Company, St. Louis, Mo., $4470; Guarantee Electric Company, St. Louis, Mo., $5114; International Electric Fixture & Contracting Company, St. Louis, Mo., $6445; Nebraska Engineering Company, Lincoln, Neb., $6733.50.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids February 21, as follows:

Class 1.—One plain gap grinder—Bidder 116, Hallidie Machinery Company, Seattle, Wash., $4580; 176, Manning, Maxwell & Moore, New York, $5390.

Class 81.—Turret turning gear equipment—Bidder 47, Cutler-Hammer Mfg. Company, Milwaukee, Wis., $10,990; 72, Diehl Mfg. Company, Elizabethport, N. J., $3545, part, and $3425, part; 111, General Electric Company, Schenectady, N. Y., $3360, part; 266, Waterbury Tool Company, New Britain, Conn., $3400, part.

Class 82.—One necessary variable speed power transmission apparatus—Bidder 47, Cutler-Hammer Mfg. Company, Milwaukee, Wis., $27,150; 72, Diehl Mfg. Company, Elizabethport, N. J., units; 111, General Electric Company, Schenectady, N. Y., $996, part; 266, Waterbury Tool Company, New Britain, Conn., $8500.

Class 84.—Two electric ventilating sets—Bidder 72, Diehl Mfg. Company, Elizabethport, N. J., $557.50; 111, General Electric Company, Schenectady, N. Y., $915; 237, B. F. Sturtevant Company, Hyde Park, Mass., $7540; 280, Griscom, Spencer Company, New York, $620.

CURRENT METAL PRICES.

The following quotations are for small lots, New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market repo

IRON AND STEEL—

Bar Iron from store—

Refined Iron:

1 to 1¾ in. round and square	₩ lb 1.75¢
1½ to 4 in. x ⅜ to 1 in.	₩ lb 1.85¢
1½ to 4 in. x ¼ to 5-1	₩ lb 1.85¢
Rods—⅜ and 11-16 round and square	₩ lb 1.85¢

Angles:	Cts ₩ lb
3 in. x ¼ in. and larger	2.00¢
3 in. x 5-16 in. and ⅛ in.	2.25¢
1½ to 2½ in. x ¼ in.	2.10¢
1½ to 2½ in. x 3-16 in. and thicker	2.00¢
1 to 1¼ in. x 3-16 in.	2.10¢
1 to 1¼ x ⅛ in.	2.20¢
⅞ x ⅛ in.	2.30¢
¾ x ⅛ in.	2.40¢
⅝ x ⅛ in.	3.45¢
½ x 3-32 in.	4.25¢

Tees:	
1 in.	2.65¢
1¼ in.	2.45¢
1½ to 2½ x ¼ in.	2.15¢
1½ to 2½ x 3-16 in.	2.35¢
3 in. and larger	2.05¢
Beams	2.00¢
Channels, 3 in. and larger	2.00¢
Bands—1½ to 6 x 3-16 to No. 8	2.30¢
"Burden's Best" Iron, base price	3.15¢
Burden's "H. B. & S." Iron, base price	2.95¢
Norway Bars	3.60¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.90¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

Black	One Pass, C.R Soft Steel.	R. G. Cleaned.
	₩ lb	
No. 16	2.55¢	2.80¢
Nos. 18 to 20	2.70¢	2.90¢
Nos. 22 and 24	2.75¢	3.00¢
No. 26	2.80¢	3.10¢
No. 28	2.95¢	3.30¢

Russia, Planished, &c.

Genuine Russia, according to assortment, ₩ lb 12 @14½

Patent Planished, W. Dewees Wood, ₩ lb A, 10¢; B, 9¢ net.

Galvanized.

Nos. 12 and 14	₩ lb 2.95¢
Nos. 22 to 24	₩ lb 3.30¢
No. 26	₩ lb 3.50¢
No. 28	₩ lb 3.80¢

No. 20 and lighter 36 inches wide, 25¢ higher

Genuine Iron Sheets—

Galvanized.

Nos. 22 and 24	₩ lb 5.75¢
No. 26	₩ lb 6.25¢
No. 28	₩ lb 7.25¢

Corrugated Roofing—

2½ in. corrugated.	Painted	Galvd
No. 24	₩ 100 sq. ft. $3.85	4.80
No. 26	₩ 100 sq. ft. 2.95	4.00
No. 28	₩ 100 sq. ft. 2.60	3.75

Tin Plates—

American Charcoal Plates (per box.)

"A.A.A." Charcoal:	
IC, 14 x 20	$6.65
IX, 14 x 20	7.90
A. Charcoal:	
IC, 14 x 20	$5.60
IX, 14 x 20	5.70

American Coke Plates—Bessemer—

IC, 14 x 20, 107 lb	$4.50
IX, 14 x 20	5 50

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8 70
IX, 20 x 28 with an 8 lb. coating	10.70

Seamless Brass Tubes—

List November 15, 1908. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

Copper Tubes—

List November 13, 1908. Base price 21¢

Brazed Brass Tubes—

List August 1, 1908. 19½¢ ₩ lb

High Brass Rods—

List August 1, 1908. 14¼¢ ₩ lb

Roll and Sheet Brass—

List August 1, 1908. 14¼¢ ₩ lb

Brass Wire—

List August 1, 1908. 14¼¢ ₩ lb

Copper Wire—

Base Price. Carload lots mill 13½¢

Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ lb 18 ¢

Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.

Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot

Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot

Planished Copper, 1¢ ₩ square foot more than Polished

METALS—

Tin—

Straits Pig ₩ t @

Copper—

Lake Ingot	₩ lb 15@15
Electrolytic	₩ lb 14@14
Casting	₩ lb 14¼@14

Spelter—

Western ₩ lb @

Zinc.

No 9, base, casks ₩ lb 8 ¢ | Open ₩ lb @

Lead.

American Pig	₩ lb 5 @
Bar	₩ lb @

Solder.

½ & ½, guaranteed	₩ lb 28 @
No. 1	₩ lb 25 @
Refined	₩ lb 24 @

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ lb @
Hallette	@
Other Brands	@

Bismuth—

Per lb $2.00@$2.25

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting

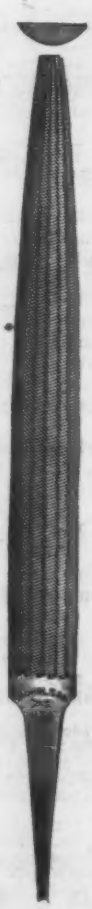
Rods & Wire Base Price

Sheets Base Price

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents
Copper, Heavy cut and crucible	₩ lb 10.75@11
Copper, Heavy and Wire	₩ lb 10.50@10
Copper, Light and Bottoms	₩ lb 9.50@ 9
Brass, Heavy	₩ lb 7.00@ 7
Brass, Light	₩ lb 5.50@ 5
Heavy Mechine Composition	₩ lb 9.25@ 9
Clean Brass Turnings	₩ lb 7.00@ 7
Composition Turnings	₩ lb 8.25@ 8
Lead, Heavy	₩ lb @ 4
Lead, Tea	₩ lb @ 3
Zinc Scrap	₩ lb @ 4



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NICHOLSON?

NICHOLSON U.S.A. TRADE MARK

Nicholson File Company

Providence, R. I.